COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

[illegible] 1999 • VOL. [illegible] • NO. [illegible] • [illegible]

SOMETIMES TECHNOLOGY CAN BE GLAMOROUS

The 11th Annual Computerworld Smithsonian Award Gala

NEWSPAPER

CELEBRATING IT LEADERS–THE HEROES OF THE INFORMATION REVOLUTION

FOR ONE NIGHT EACH YEAR, business, educational and political leaders from around the globe gather at the Computerworld Smithsonian Awards gala in Washington, DC to witness the technology revolution first-hand.

In addition to honoring the newest IT Leaders, the awards program also celebrates the lifetime achievements of established IT Leaders whose personal insight, inspiration, leadership and accomplishments make them role models for the IT Leaders of tomorrow.

The following highlights are from last year's ceremony. Stay tuned for scenes from this year's event.

Pictured here with an IT Leader protégé, Sun Microsystems Co-Founder Scott McNealy accepts a Computerworld Smithsonian Award for his achievements in global integration. His leadership in the industry's transition to open computing standards and to the client-server model of computing has been crucial to the information revolution.

As if being Vice President of the United States isn't impressive enough, Al Gore is also a Computerworld Smithsonian Award honoree, thanks to his long-standing advocacy of technology in education. His continuing vision has been critical to the sharp rise in the role of computing and the Internet in America's schools.

Just months before winning the 1998 Nobel Prize in Chemistry, Professor John Pople was honored with a Computerworld Smithsonian Award for his breakthrough achievements in science and chemistry. Since the 1960s, he has pioneered the use of high-speed computers to analyze the dynamics of molecules based on quantum mechanics.

COMPUTERWORLD
THE NEWPAPER FOR IT LEADERS

IDG .net

BUSINESS QUICKSTUDY

Learn how to calculate discounted cash flow and save the business money in our newest feature. Page 60

TAMING NT

Patches and well-debugged device drivers can make Windows NT 4.0 more stable. Page 79

CABLETRON'S NEW CEO

Piyush Patel succeeds co-founder Craig Benson in move to focus on Internet, telco service providers. Page 14

COMPUTERWORLD®

THE NEWSPAPER FOR IT LEADERS ▪ WWW.COMPUTERWORLD.COM
JUNE 7, 1999 ▪ VOL. 33 ▪ NO. 23 ▪ $4 COPY

EXTRANET SPARKS INDUSTRY SAVINGS

Electric parts vendors to slash EDI costs by hundreds of millions

BY JULIA KING

JULIA KING

THOMAS & BETTS' John Haluska: Dependability was key

Beginning in September, hundreds of companies in the $65 billion electrical parts industry plan to pull the plug on costly value-added networks. Instead, they plan to exchange critical ordering and inventory information over a new, one-of-a-kind frame-relay-based extranet.

Industrywide, the move is expected to yield huge savings in electronic data interchange costs and help usher small and midsize players into the industry's blossoming e-commerce arena.

That's because users of the IDX-change extranet will pay a flat monthly fee of $840 to $2,900 for, among other things, "all the EDI you can eat," said Jim Ford, director of e-commerce at $3.7 billion Graybar Electric Co. in St. Louis.

Now, many manufacturers' and distributors' VAN-based EDI costs easily run into the millions annually. So far, 210 companies have signed up for the extranet.

What's more, there will be no up-front extranet connection costs or hassles, all of which are to be handled by MCI WorldCom Inc. under a dedicated frame-relay network services contract awarded last week by the Industry Data Exchange Association.

In the automotive industry, by contrast, users of the ANX extranet — which, like most vertical industry extranets, runs over the Internet — are individually responsible for implementing their own network connections.

Extranet, page 125

MICROSOFT BOLSTERS CONSUMER TECH

Will it mean better corporate products?

BY KIM S. NASH

Microsoft Corp. has developed a split personality. One side manufactures traditional corporate information technology software; the other is eyeing the nascent market for online consumer software. The surprise is that it's the latter that appears to be getting more attention from Microsoft executives lately, according to analysts.

Some observers are wondering how the company will reconcile the two seemingly very different strategies. Others wonder what impact, if any, the interest in the consumer side will have on future developments for corporate users.

Microsoft has spent $8.8 billion since January feverishly buying stakes in telecommuni-

Microsoft, page 125

Microsoft's R&D Spending

*Projected	AS A PERCENTAGE OF SALES	IN DOLLARS
1997	16.9%	$1.9B
1998	17.3%	$2.5B
1999*	14.3%	$2.6B
2000*	14.1%	$3.0B

SOURCE: BANK OF AMERICA SECURITIES, SAN FRANCISCO

AMDAHL'S BIG IRON FALLS SHORT

Users need to revisit Millennium license fees

BY JAIKUMAR VIJAYAN

The 60 users who have purchased Amdahl Corp.'s recently shipped Millennium 800 series mainframes may want to renegotiate their software licenses and performance guarantees.

Amdahl this week will announce that the mainframe — touted by the company as the industry's performance leader when it was announced last June — is underperforming initial estimates by up to 15%.

Compared with original per-

Amdahl, page 125

DAVID JOEL

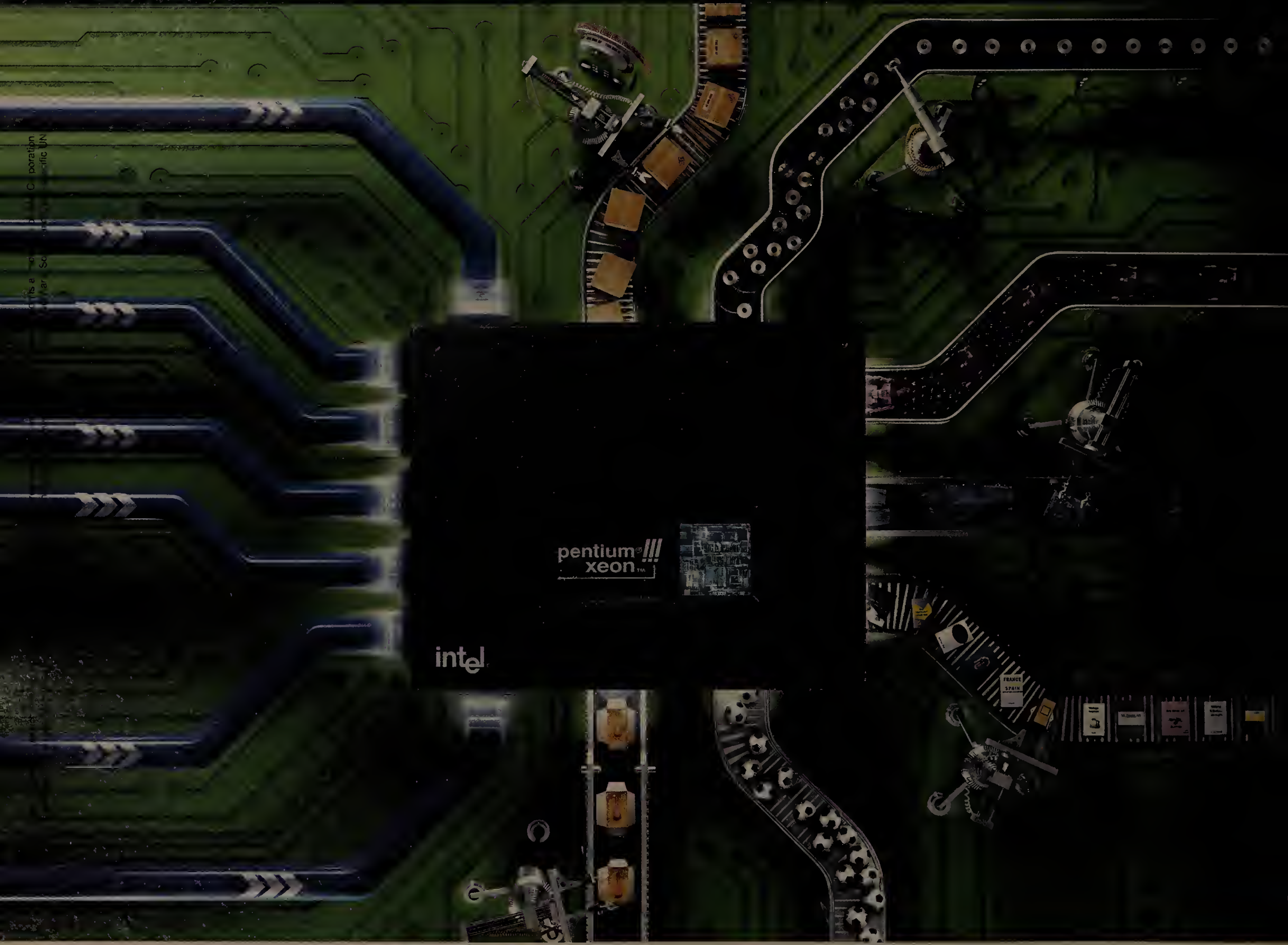
JERRY MILLER, CIO at Sears, Roebuck and Co., admits that the difficulty of retraining mainframe programmers to become experts in, say, data mining or e-commerce is a major concern

AFTER Y2K

AS YEAR 2000 PROJECTS begin to wind down, companies are gradually shifting their attention to more strategic initiatives, such as Web-enabled applications, supply-chain management, customer-service systems and a second wave of ERP projects. But what about all those Cobol programmers who have been busy fixing date-challenged code? Some will be shifted to new projects, but it isn't easy to retrain them in hotter technologies. *Report starts on page 62.*

NEWSPAPER

Is your e-business exploding?



The Pentium® III Xeon™ processor-based server.
As your e-business grows, it does too.

intel inside
pentium III xeon

Growth. It's vital to any successful business, but explosive growth is hard to predict—especially on the Internet. That's why the unmatched 8-way scalability of the Intel® Pentium® III Xeon™ processor for servers is so important. It lets you take full advantage of critical business applications as your e-business grows. On UNIX, NT and other popular operating systems: More important, you have the power and reliability to comfortably handle increases in back-end operations such as online transaction processing, invoicing and distribution. So when it comes to explosive growth, relax. Your Pentium III Xeon processor-based server will be ready for it. To learn more about the Pentium III Xeon processor, visit us on the Web. ► www.intel.com/IT

intel.
The Computer Inside.™

UNSUNG HEROES

Tonight the winners of the *Computerworld* Smithsonian Awards will be announced in a Washington ceremony showcasing IT projects that benefit society and business. The finalists include such well-known names as FedEx, Schwab and Cisco, but they also include little-known names such as (left to right) Nicole Mandel of HIV In-Site, Chuck Hitchcock of the Center for Applied Special Technology and Richard Calton of HarlemLive. PAGE 40

COMPUTERWORLD THIS WEEK

JUNE 7, 1999

NEWS 4

4 **MICROSOFT OFFERS** users the option of renting BackOffice instead of buying.

6 **FORD OFF-LOADS** server maintenance to HP so it can focus on e-commerce efforts.

8 **USERS ADD** front-office apps, treating ERP as a data backbone end users rarely see.

11 **HOME DEPOT** eliminates 95% of paper handling by scanning supplier documents.

12 **Y2K DELAYS NYSE** move to extend trading beyond current business hours.

14 **FIRST UNION INVESTS** $150M in effort to grow on Net rather than buying banks.

16 **BANK OFFERS SERVICE** to protect copyrighted material after it's downloaded.

20 **PRICE WAR MAY** follow Merrill Lynch's entry into online trading.

OPINION

35 **CONGRESS LOOKS** after its own in Y2K legislation, David Moschella charges.

38 **CONSULTANTS FOIST** methodology on IT managers who need less structure, not more, argues Paul Clermont.

MORE

Editorial/Letters....... **34, 35**
How to Contact CW **124**
Shark Tank **126**
Stock Ticker............. **123**
Company Index **124**

BUSINESS 49

50 **AFFILIATE PROGRAMS** pay off, generating hits and revenue at the same time.

50 **READER'S DIGEST** overhauls IT to make existing data pay new dividends.

52 **OIL BUSINESS LAGS** in Y2K repairs; experts expect short-lived failures.

52 **HOSPITALS MISTRUST** device makers' Y2K assurances; many add their own tests.

53 **PRUDENTIAL EMERGES** from Dark Ages of IT with powerful financial services systems.

54 **PALMPILOTS TUNE** hearing aids, in just one of many quirky uses for handhelds.

56 **IT WOMEN SUFFER** lower salaries than male counterparts, despite hot job market.

58 **GREENSPAN, NOT IT,** has done the most to keep U.S. economy rolling, Paul A. Strassmann argues.

60 **BUSINESS QUICKSTUDY:** Discounted cash flow calculations can save money on leases.

62 **AFTER Y2K,** what projects will you work on, and will you have to staff to do it?

68 **SERVICE AGREEMENTS** have to start with IT agreeing to talk about user expectations.

70 **PROGRAMMING** prodigy profiles show who'll be running the IT show in a few years.

TECHNOLOGY 77

SOFTWARE

78 **MICROSOFT BOOSTS** XML, offering corporate developers tools and direction.

79 **UPDATES AND** administrators' adjustments have made NT easier to manage, users say.

81 **IBM CENTERS** encourage customers to stress-test huge applications.

HARDWARE

82 **INTEL'S MERCED** chip will mean lower prices for high-end servers — but when?

83 **Y2K-RELATED PC** inventories promise to be a long-term boon to desktop asset tracking.

NETWORKS

84 **AUTOMATED** business-to-business app integration tools are hitting the market.

84 **3COM SWITCH** modules will let IT assign priority levels from Ethernet networks to ATM.

88 **EXEC TECH:** We take a look at four personal information managers.

105 **QUICKSTUDY:** We define and explain Web-based groupware.

106 **FIELD REPORT:** Visual Café and PowerJ help smooth Web-to-database connections.

110 **FLASHBACK:** In 1971, an IBM team created the floppy disk.

112 **SKILLS SCOPE:** Object languages are in demand in almost every industry.

INTRODUCING

MICHAEL CUSUMANO

Are you competing on **Internet time**? Then check out *Computerworld*'s newest **monthly columnist**: strategist and MIT business school professor **Michael Cusumano**. The author of *Competing on Internet Time: Lessons from Netscape and Its Battle With Microsoft* and *Microsoft Secrets: How the World's Most Powerful Software Company Creates Technology, Shapes Markets, and Manages People* debuts this week with a look at **e-commerce prize winners. 34**

Michael Cusumano

AT DEADLINE

Temp Workers At Microsoft Unionize

Eighteen contractors working for Microsoft Corp.'s financial software group have formed a collective bargaining unit through the Washington Alliance of Technology Workers, a Seattle-based local affiliated with the Communications Workers of America union. Most have signed a petition calling for equitable pay, better benefits and appropriate job classifications.

Microsoft has been embroiled in an ongoing lawsuit with so-called permatemps.

Gramm Proposes H-1B Visa Increase

U.S. Sen. Phil Gramm (R-Texas) last week proposed a permanent, 74% increase in the number of H-1B immigration visas, but industry observers said it would be of little benefit to companies looking to hire information technology professionals. IT managers said it's often easier and cheaper to use offshore labor than to import IT professionals from foreign countries via the H-1B visa program.

Microsoft/Bristol Trial Under Way

Day One of Bristol Technology Inc.'s private antitrust trial of Microsoft Corp. in Bridgeport, Conn., began Thursday with Danbury, Conn.-based Bristol presenting several hours of technology primers for the 10 jurors. Bristol sued Microsoft in August, claiming that the software giant used anticompetitive practices to try to shut it out of the market for Unix-to-Windows translation tools.

Amazon Fights for *Times* Book List

Amazon.com Inc. has entered a Seattle courtroom in an attempt to continue publishing *The New York Times'* bestseller list. The *Times* fired off a letter to the online bookseller on May 28, ordering Amazon to stop publishing the list, on whose components Amazon offers a 50% discount. Amazon announced the discount May 17.

BackOffice to Be Offered Via Rental Pilot Program

Microsoft looks to make tools available through application service providers

BY SHARON GAUDIN AND BOB WALLACE

MICROSOFT CORP. plans to experiment with renting its BackOffice suite as an alternative to selling it — but that will require a total overhaul of its licensing policy, a company official said last week.

The trial run is the first step toward making Microsoft software available to companies that want to use it but would rather not buy, deploy and manage it themselves.

The industry giant is starting a small pilot program that will enable a group of application service providers to both use and lease the software components in BackOffice, according to Warren Talbot, Microsoft program manager for commercial and embedded licensing programs.

The program, which will be officially announced in a few weeks, is expected to run through the end of the year or even into next year, Talbot said.

"For folks who are frustrated by constantly baby-sitting their servers and applications and want to . . . get focused on application development, this might be beneficial," said Mike Riley, director of Internet application development at R. R. Donnelley & Sons Co. in Chicago.

"But there's a lot to be seen," Riley added. "I want to see some big Fortune 100 companies doing this, and I want to see them doing it with mission-critical applications. Maybe then I'll believe."

Application service providers (ASP) are companies that provide businesses with access to application software, service and support, off-loading those costly chores from firms' information technology departments.

Employees get applications online from the host's Web site after a company pays a start-up fee and either monthly or per-usage fees.

But to make its plan run smoothly, Talbot said, Microsoft will have to come up with a new licensing model for the service provider program. Currently, when Microsoft sells a piece of software, the buyer isn't allowed to copy, lease or rent it.

Lots of Licenses

"[A provider] might support 10, 100 or 1,000 businesses that each has a list of different users," explained Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass. "The way Microsoft operates today, every single user from every single company would need a license — and that would be hell for the [provider]."

Talbot said Microsoft is aiming to work both ends of the application service provider market: supplying applications for leasing and supplying the infrastructure for providers to host the applications.

For example, Microsoft Exchange, which is part of the BackOffice suite, could be leased out to companies that needed an e-mail service.

Other BackOffice components, such as Proxy Server and SQL Server, could be used inside the service provider to help it run other applications, Talbot said.

"Instead of getting in the way of the [service provider] movement, which has the potential to erode its traditional application business, Microsoft has chosen to be in the forefront of the movement," said Christine Heckart, an analyst at TeleChoice Inc. in Boston.

BackOffice user Pat Ryan, a senior software engineer at Hobart Corp. in Troy, Ohio, said he was skeptical of ASP services because of their uncertain billing methods.

"If my usage goes up and I get a big bill this month, I'm going to have to cut back somewhere else to make up for it," he said. "I'd rather have a nice, flat fee because I can stay in control of my expenses that way." ▶

Turning Less Into More

[illegible] service p[illegible] mo[illegible]h less. Here's [illegible]

- An ASP often teams up software companies with Internet service providers.
- The ASP is geared toward providing software access, service and support to businesses that don't want to buy and host the application on-site.
- The applications are accessed online and aren't downloaded at any point.
- The business pays an initial start-up fee and either a monthly flat fee or per-usage fee.
- Application customization usually is minimal.

Computerworld Names New President, CEO

IDG, Ziff-Davis veteran takes the helm

Michela O'Connor Abrams, a 15-year veteran of the publishing and trade show industries, has been named president and CEO of *Computerworld.* She will retain the title of publisher, a position she has held since March. O'Connor Abrams succeeds outgoing President and CEO Jim Martin, who is moving to a senior management position at America Online Inc.

MICHELA O'CONNOR ABRAMS was named *Computerworld* publisher in March

Prior to joining *Computerworld*, she was chief operating officer at Ziff-Davis Events, at which she managed content, sales, marketing and operations for 13 trade shows and conferences, and also managed consulting services.

From 1991 to 1996, she was group vice president and publisher at The McGraw-Hill Cos.' computer trade publications, where she was responsible for the operation and management of *LAN Times*, *Network Technical Journal*, *Selling Networks* and *Open Computing.*

O'Connor Abrams' experience also includes roles at International Data Group, *Computerworld*'s parent company. She started in 1985 as a regional sales executive for *Macworld* magazine and moved to a regional sales manager position the following year.

She moved to *Computerworld* in 1988 and served as western vice president of sales until 1991.

O'Connor Abrams sits on the board of directors of the Internet Advertising Bureau and serves on two corporate boards. ▶

Is your data a beast to warehouse?

SyncSort tames the data beast and slashes data warehouse load time by up to 90%.

Data warehouse staging can be really wild. You have data from different sources, in different formats, sorted in different ways – a jungle of data to select, reformat, clean, standardize, aggregate, and sort.

SyncSort whips that data into shape fast. Jobs that took days take hours, jobs that took hours take minutes. Designed for high volume, SyncSort speeds loads, reorgs, indexing, and sorted extracts for reports or handoffs.

And SyncSort is available for all major platforms: UNIX, Windows NT,® and mainframes.

Tame the beast. Get a free lion.

For a trial copy of SyncSort, your FREE copy of *6 Data Warehousing Tasks Made Easier*, and a **FREE bean-bag baby lion**,* call us at (201) 930-8200, Dept. 69CWA or visit us at www.syncsort.com/69CWA.

*Available to qualified IT Professionals in the U.S. and Canada.

syncsort

Ford-HP Partnership Boosts IT Staff, E-Business Strategy

HP to manage 1,000 servers worldwide

BY BOB WALLACE

IN AN EFFORT to prepare for its business units' e-commerce initiatives amid an IT staff shortage, Ford Motor Co. last week announced a five-year deal with Hewlett-Packard Co. to help administer and manage up to 1,000 servers worldwide.

Under the agreement, HP plans to meet mainframe-like service levels in the areas of availability, reliability and security for Ford's print, file, application and Web servers. Industry sources have pegged the deal at $100 million to $200 million.

"We wanted to make sure that technology was waiting for business and not the other way around," said George Sordu, director of technical services at Dearborn, Mich.-based Ford. "[But] there weren't enough people to handle our growing server environment. HP is augmenting our resources, which will allow us to support e-commerce efforts."

Ford Teams Up

Ford has embarked on a strategy of partnering with vendors to free up and augment its worldwide IT staff. Here are some recent examples:

GROUP	DETAILS
IBM	$300M application development deal
Compuware	$500M application maintenance deal
Suppliers	Key Ford suppliers take on design work
HP	Will administer and manage 1,000 servers worldwide

Skills Shortage End Run

Ford has found that given the shortage of skilled information technology staff, it's more efficient to team with business partners, and the HP deal is the latest evidence of that. The automaker has shifted much of its vehicle design work to its top suppliers and recently partnered with IBM for application development and with Compuware Corp. for application maintenance [CW, Jan. 19].

Although some of those moves are expected to cut costs, Ford stressed that the HP deal is more about providing a robust and highly reliable server infrastructure for use by its business units. Because the deal augments Ford's current information technology operations, none of its 5,100 staff worldwide — half of whom are contractors — has been reassigned or let go.

Sordu wouldn't divulge the e-commerce' initiatives Ford's business units are working on, but one industry expert said it's likely that those efforts will focus on marketing products and related services to consumers.

"I would expect them to develop a portal to all their offerings that would enable consumers to shop for, order, finance and insure a car — as well as handling trade-ins — all in one process," said Daron Gifford, global director of the automotive consulting practice at Deloitte & Touche Consulting Group in Detroit. "Integrating all these aspects of the vehicle [buying] experience would be very powerful."

> I would expect [Ford] to develop a portal to all their offerings.
>
> **DARON GIFFORD, DELOITTE & TOUCHE**

Ford is dealing with a problem most automakers face: spending the time and money to find IT staff with specialized skills and re-educating existing staff, when possible, on more focused technology areas, Gifford said. "The partnering approach is faster, which is why I expect to see much more of it soon in the auto industry," he said.

As part of the Ford-HP deal, HP will build a dedicated operations services center on Ford property in Dearborn.

HP has already assigned about 70 specialists to the automaker's U.S. server effort, with an unspecified number to go to Ford data centers in the U.K. and Germany, according to an HP spokeswoman. ◗

Borders Using Web To Pull Customers Back Into Stores

Bookseller's model may be future wave

BY SHARON GAUDIN

Borders Online Inc. may be in third place when it comes to online book sales, but industry analysts say the giant bookseller is ahead of most retailers when it comes to integrating its Web presence with its brick-and-mortar stores.

At a time when its rivals are working to direct customers' eyes toward the Web, Borders is working to use the Internet to bring their feet — and their wallets — back to physical stores. Here's how:

- Borders is about to launch a print-on-demand effort. The bookseller is working with Atlanta-based Sprout Inc. to print high-quality, out-of-stock paperbacks in stores in 15 minutes.
- Borders offers coupons and sells gift certificates online that can be used only in stores.
- Last year, Borders began using in-store Web browsers to access a database of company warehouses to handle special orders. The process enables clerks to immediately find out if the book is available and then order it instantly, taking special orders from a money-losing venture to between $50 million and $100 million this year. The company plans to add delivery to its special-order service.

"Borders realizes that the Internet has a lot of utility beyond that online sale. In the future, you're going to see a lot more retailers making these same kinds of plays," said John Glass, an analyst at BT Alex. Brown Inc. in New York.

Online Book Sales

RETAILER	1998 SALES
Amazon.com	$610M
Barnesandnoble.com	$70.2M
Borders.com	$5M

SOURCE: PUBLISHERS' WEEKLY

The moves represent an evolution of sorts at Borders, which had been slow to jump to the Web compared with its rivals. Since the birth of Amazon.com, Barnes & Noble Inc. has built up a Web site to make a stock offering.

Now Borders is forging its own way, using the Internet as a platform for store-based initiatives.

Borders is using IBM's DB2 database on an AIX operating system to warehouse 700,000 titles in companywide inventory, according to Rick Vanzura, president of Borders Online, a subsidiary of Ann Arbor, Mich.-based Borders Group Inc. Microsoft Corp. software — Windows NT Server, its SQL database, Windows 95 PCs and Internet Explorer browsers — support inventory application front ends and in-store inventory systems.

Vanzura said the print-on-demand project is an extension of Borders' special-order service.

Borders is building a database of out-of-print titles, housing the books' text and cover image. When the service launches later this year, a salesperson will be able to query the database via a Web browser. If the title is available, the salesperson can print the book and cover, cut it to size and bind it at the store in 15 minutes.

"Special orders and print-on-demand eliminates the inventory costs of keeping books around that aren't selling and product damage costs," Vanzura said. "And now if a customer wants a book that's not on our shelves, we can get it for them. The Internet lets us do that for them." ◗

Barnes & Noble Backs Off Ingram Buy

Rather than face a drawn-out legal battle, Barnes & Noble Inc. last week nixed its planned $600 million purchase of nationwide distributor Ingram Book Group, according to a statement from Barnes & Noble.

Though Barnes & Noble said it would continue to use Ingram, the company will build two distribution centers in Reno, Nev., and Memphis.

The merger was announced last November and received scrutiny from antitrust officials. Critics charged that the deal would give Barnes & Noble too much power.

But both companies said they expected to win regulatory approval.

- Kathleen Ohlson

The Fastest Way To Make E-Commerce A Reality.

FASTER
FASTER
FASTER

©1999 Computer Associates International, Inc., Islandia, NY 11749. All product names referenced herein are trademarks of their respective companies.

Everybody's talking about making money on the Internet, but who's actually doing it?

Our clients.

Every day they're using the Internet to take orders, ship materials, market products, sell prospects, you name it. Every day they open their doors to millions of new customers they could never reach before.

You can do it too—much faster than you ever dreamed possible—*guaranteed*.

The key is our ability to integrate legacy applications faster than anyone else. We can extend legacy applications for e-commerce instantly. And when it comes to support, we support more mission-critical, e-commerce applications than anyone.

So stop talking about e-commerce and start doing it. Call us today to learn how we can help you get to the e-market faster, faster, faster.

For a FREE e-commerce assessment, call **1-877-462-2477** or visit our website at **www.cai.com/gps**.

COMPUTER® ASSOCIATES
Global Professional Services

Accelerated Delivery.™ *Guaranteed.*

BRIEFS

ITAA Files Motion on Temp Workers

The Information Technology Association of America (ITAA), a trade group in Arlington, Va., last week filed a friend-of-the-court petition in support of Microsoft Corp.'s request for a rehearing in a case that would reclassify long-term temporary workers as permanent employees. "To let this decision stand would severely undermine the information economy," the ITAA said. Eight other groups joined in the motion.

Microsoft CTO to Take Leave of Absence

Microsoft Chief Technology Officer Nathan Myhrvold plans to take an open-ended leave of absence starting July 1. Myhrvold, who has worked at Microsoft since 1986, was a sort of roving big-thinker and adviser to CEO Bill Gates. He won't be replaced, a spokesman said.

E-Storefronts In Bermuda

Atlanta-based EOCnet.com is selling electronic licenses that let Internet commerce companies from anywhere in the world base their e-commerce operations in Bermuda to take advantage of favorable banking and trade laws. For an annual fee of $2,000, companies can buy an e-Suite, which amounts to the legal right to operate out of Bermuda. Partners in the venture include Visa International Inc. and PricewaterhouseCoopers.

Short Takes

Santa Ana, Calif.-based **PROCOM TECHNOLOGY INC.** has announced it lost $3 million on revenue of $22.7 million for the quarter ended April 30. . . . **SILICON GRAPHICS INC.** has upgraded its entire line of high-end Origin servers ($17,659 to more than $75,000) and Onyx workstations ($87,000) with its R12000 MIPS processor. . . . Boston-based IT consulting firm **KEANE INC.** last week continued its recent buying spree, acquiring **JAMISON/GOLD LLC**, a services firm in Marina del Rey, Calif., that specializes in Internet applications.

Some Users Relegate ERP to Background

Augment systems with business apps that focus more on customers, business leads

BY CRAIG STEDMAN

THE END OF the Y2K gold rush is an obvious reason why ERP vendors are rushing to extend their reach into sales force automation and other new applications. But another source of motivation comes from users who are starting to look beyond their internal operations.

Take A-dec Inc., a dental equipment maker that runs its business on Baan Co.'s enterprise resource planning (ERP) software. About 400 end users share 200 Baan licenses — a situation that means workers sometimes have to wait to get into the system.

But A-dec recently decided against buying more ERP licenses, said CIO Keith Bearden. Instead, the Beaverton, Ore., company plans to sit tight while it augments the Baan system with customer and product-data management applications that will become the main point of contact for many users. And the new applications may not all come from Baan, he said.

Background Backbone

By the end of next year, "probably less than half of the users on the Baan system now will still log on to it," Bearden said. Key items such as production bills of material and price-quote requests are expected to be handled through the other applications, with the ERP software lurking more in the background as A-dec's corporate data backbone.

That kind of approach is becoming "the trend rather than the exception" for ERP users, said Stephen Cole, an analyst at Forrester Research Inc. in Cambridge, Mass.

Companies that installed ERP financial and manufacturing software to fix year 2000 problems or replace incompatible departmental applications are now looking ahead to increasing sales and providing better service to customers, Cole said. "But they're not going to get that from their general-ledger systems," he added.

Single-Digit Sales Growth

Purchases of back-office ERP licenses have already hit the wall this year, leaving once high-flying vendors with reduced profits or even losses. And sales to big users are expected to grow only into the single digits by the end of next year, according to a report Forrester released last month.

That's what has been pushing ERP vendors from SAP AG on down to branch out into new applications such as customer management, e-commerce and advanced business planning, Cole said.

ERP systems may run most internal operations, "but the important stuff is bringing in the business," said Norman Thomas, director of information systems at Trojan Technologies Inc. in London, Ontario. "If you don't do that, you won't have anything to manage on the ERP side."

Trojan, a maker of water-treatment systems, uses Baan's ERP software and is starting to roll out the Dutch vendor's product data management application. But Trojan already put together its own sales and order prospecting system, Thomas said.

Acme Electric Co., a maker of electronic devices in East Aurora, N.Y., also is looking beyond its Oracle ERP system to applications that are more sales-oriented.

"We've spent time in the [internal] operations area, and we're not looking to improve that anymore," said Hugh Allan, director of information technology at Acme. "Now, we're looking to do things outside our office walls." ◗

JUST THE FACTS

ERP Shakeup

Sales slowdown: New ERP purchases have slowed across the board this year. Even market leader SAP reported only a 7% increase in first-quarter product revenue. The slowdown has led to profit dips and pushed some vendors into the red.

Management changes: PeopleSoft last month hired a new president and chief operating officer. The same week, Baan said CEO Tom Tinsley is leaving the company. Several executives have also left SAP's U.S. subsidiary, including former President Jeremy Coote.

New products: All the ERP vendors have announced plans to put together e-commerce packages. They're also trying to move into other application areas, such as customer management, advanced planning and corporate business analysis.

Oracle CEO Vows to Cut $1B With Web Apps

Ellison doubles estimate of cost savings likely to result from using own software

BY CRAIG STEDMAN
AND STEWART DECK

The amount of money that Larry Ellison expects to save by turning Oracle Corp. into a Web-based business keeps growing and growing — ballooning to $1 billion last week.

That's twice the size of the projected cut in annual operating expenses that Oracle's CEO promised to financial analysts last month, when he first detailed plans to essentially make Oracle a guinea pig for the Internet-based software it's trying to get users to adopt.

The upcoming moves include centralizing the company's own corporate systems; installing self-service travel, expense and procurement software; performing internal training via an intranet; and using the Web to distribute all of Oracle's software to users.

Asked to explain the fast doubling of the company's expected savings, Ellison said at a press briefing that he "had to raise it because I think it was low." Oracle should be able to reach the new cost-reduction target within 18 months "at the outside" and still increase its software development spending "very substantially" at the same time, he added.

High Hopes

Analysts said running applications over the Web definitely has the potential to save money. But $1 billion amounts to 16% of Oracle's total operating expenses in the fiscal year that ended in May — a figure that many outsiders described as extremely aggressive.

Richard Niemiec, a Lombard, Ill., consultant and executive vice president of the database-oriented International Oracle Users Group, said users would obviously stand to benefit if Oracle had more money to invest in product development.

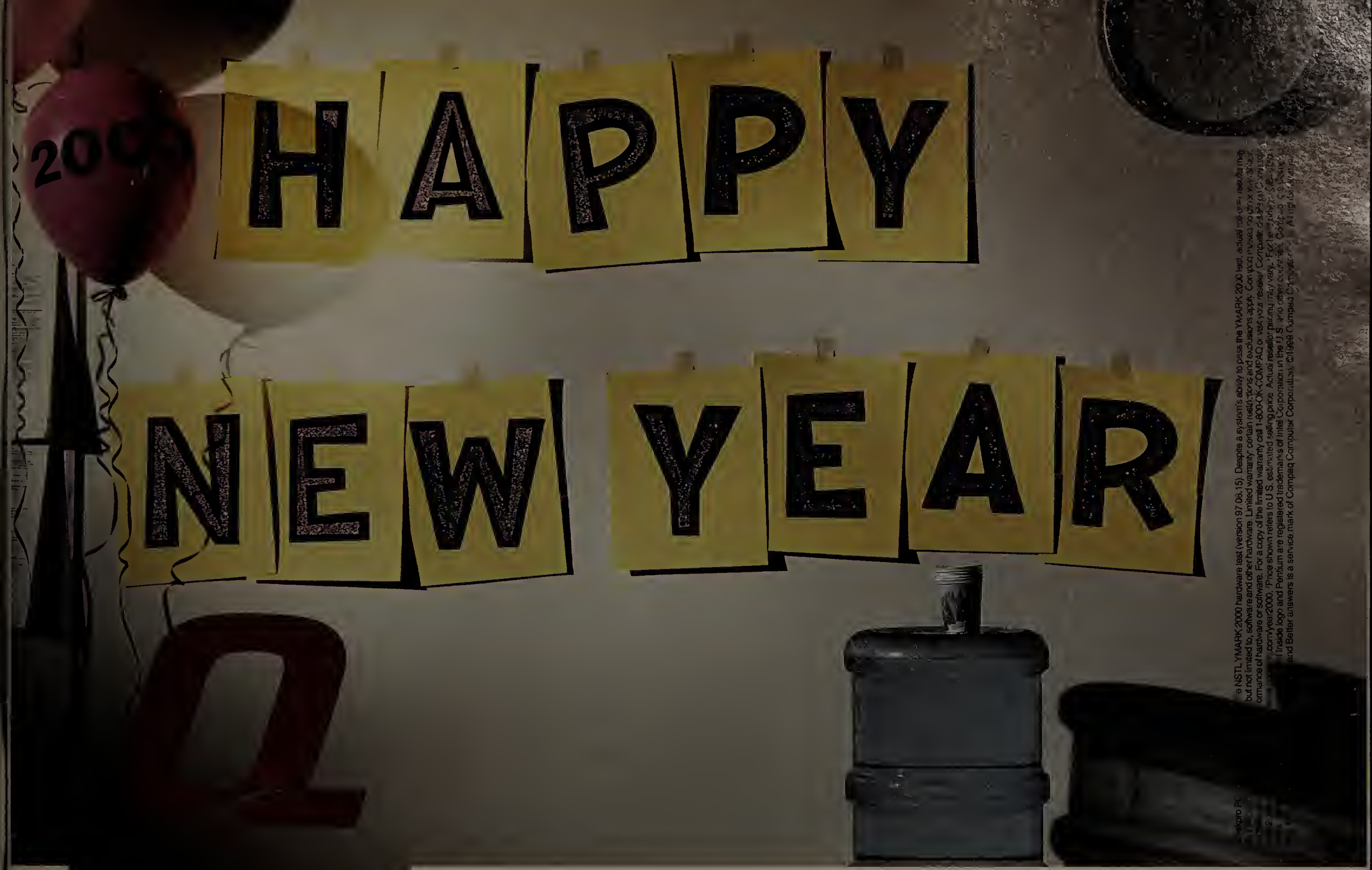
But Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif., said a list of the planned technology changes detailed by other Oracle executives before Ellison spoke last week added up to only about $100 million in savings.

"I think the numbers are very preliminary," Greenbaum said. "They really don't know yet how much they can save."

And for many users, installing Oracle's Web-based software "isn't going to be cheap, easy or fast," Greenbaum added — especially if they're still running the green-screen versions of its business applications.

An Oracle spokeswoman said the projected savings include reductions in information technology labor costs as systems are globalized. She declined to comment on reports that sharp cuts are planned in the company's 1,600-person IT staff.

Oracle did confirm that former CIO Bob Witt left the company last month and hasn't been formally replaced. ◗



[illegible]skpro PC [illegible] e NSTL YMARK 2000 hardware test (version 97.08.15). Despite a system's ability to pass the YMARK 2000 test, actual roll-over results may [illegible] but not limited to, software and other hardware. Limited warranty: certain restrictions and exclusions apply. Compaq makes no other warranties [illegible] ormance of hardware or software. For a copy of the limited warranty call 1-800-OK-COMPAQ or visit your reseller. Complete details on Compaq [illegible] .com/year2000. [2]Price shown refers to U.S. estimated selling price. Actual reseller pricing may vary. [3]For hard drives [illegible] Inside logo and Pentium are registered trademarks of Intel Corporation in the U.S. and other countries. Compaq, the Compaq [illegible] and Better answers is a service mark of Compaq Computer Corporation. ©1999 Compaq Computer [illegible] All rights reserved.

Whose warranty says you'll have one?

Ours. Every new Compaq Deskpro® is warranted to be Y2K hardware compliant[1], and the time to celebrate that is right now. Experts say to be Y2K-ready well in advance, and PC replacement (especially at new Compaq Deskpro prices) is the easiest thing to put behind you. Of course, what's ahead matters, too. Every Compaq Deskpro is optimized for the enterprise—not just powerful but manageable (pre-loaded with industry-leading asset management tools), compatible, serviceable and famously reliable. For the reseller nearest you call 1-800-AT-COMPAQ. Visit us at www.compaq.com/happy2K.

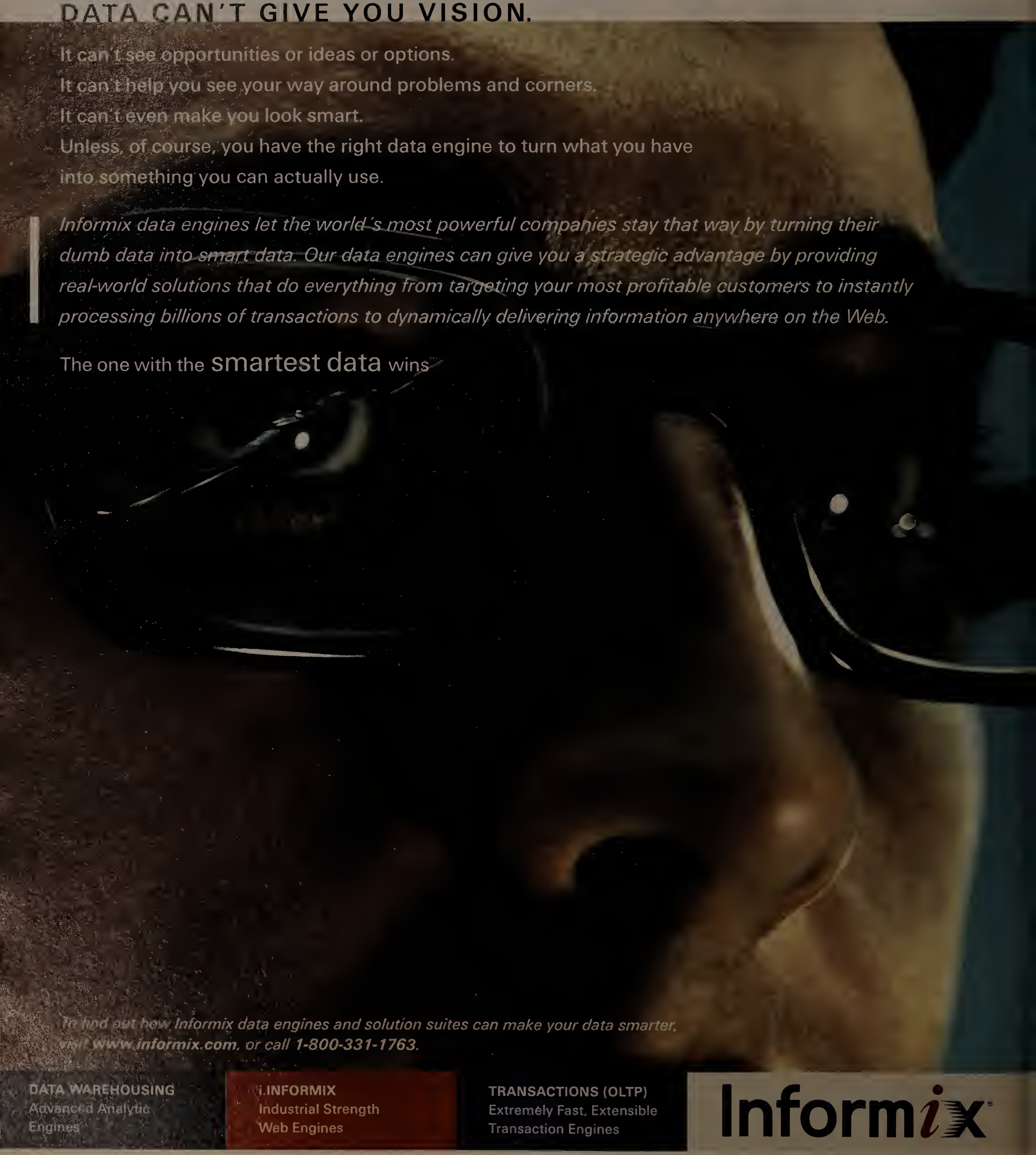
intel inside pentium® II

COMPAQ DESKPRO EN AT $1,299[2] INCLUDING MONITOR

- Pentium® II processor 350 MHz
- 4.3 GB SMART II Ultra ATA Hard Drive[3]
- 32 MB RAM
- ATI RAGE PRO TURBO AGP Graphics
- V500 15" (13.8" viewable) monitor
- 3-year limited warranty[1]

Compaq Deskpro Series

COMPAQ Better answers.℠



DATA CAN'T GIVE YOU VISION.

It can't see opportunities or ideas or options.
It can't help you see your way around problems and corners.
It can't even make you look smart.
Unless, of course, you have the right data engine to turn what you have into something you can actually use.

Informix data engines let the world's most powerful companies stay that way by turning their dumb data into smart data. Our data engines can give you a strategic advantage by providing real-world solutions that do everything from targeting your most profitable customers to instantly processing billions of transactions to dynamically delivering information anywhere on the Web.

The one with the smartest data wins.

*To find out how Informix data engines and solution suites can make your data smarter, visit **www.informix.com**, or call **1-800-331-1763**.*

DATA WAREHOUSING
Advanced Analytic
Engines

i.INFORMIX
Industrial Strength
Web Engines

TRANSACTIONS (OLTP)
Extremely Fast, Extensible
Transaction Engines

Informix®
www.informix.com

© 1999 Informix Corporation. All rights reserved

Home Depot Adds Imaging, Plans to Go 90%+ Paperless

BY DOMINIQUE DECKMYN

Despite today's Extensible Markup Language (XML) hype, the dream of paperless, business-to-business transactions is still elusive. But The Home Depot Inc. has just started to deploy an imaging system that will help it reach a 90% to 95% paperless state for internal operations by early next year.

The Atlanta-based hardware giant processes 900,000 invoices per week, many of them on paper. But the new imaging and workflow system from Colorado Springs-based Optika Inc. is expected to get rid of those paper invoices.

Home Depot has already made great strides in its war against paper. In 1991, it implemented electronic data interchange (EDI) to handle orders to its suppliers, which eliminated 70% of paper forms.

Not There Yet

But many of the company's 10,000 suppliers are small firms that aren't ready to move to electronic ordering. Plus, many documents still require signatures; replacing them with electronic signature-capture is "not cost-justified," said Kerrie Flanagan, vice president of merchandise accounting at the company's Store Support Center.

Optika's eMedia software, which runs on Windows NT Server and uses an ActiveX control on the client, is priced at $198,000 for 100 concurrent users. At Home Depot, the images are stored on an IBM RS/6000, the indexes are held in an Informix Corp. database and the eMedia server software runs on 31 NT servers.

But managing 31 servers is a bit of a problem, conceded Adam Klein, information technology manager of imaging and workflow, because "[Optika's] management tools [only] work well with up to 10 servers." Response times have also been disappointing, he said, a problem Klein is working on with Optika.

About 450 workers at the Store Support Center have started to use Optika's Windows-based client to access documents. Optika also provides browser access, a feature Home Depot may later roll out to its suppliers. By the third quarter, Home Depot hopes to complete the workflow system for EDI documents; by early next year, the scanned images should be integrated into the same workflow.

Home Depot said it will eventually add XML forms to the mix. "Ideally, we want to handle XML forms in the same workflow as scanned documents and EDI data," Klein said. XML may be easier to implement than EDI at some small suppliers, he said, though EDI is likely to remain the preferred solution at Home Depot.

"And no — I don't believe we'll ever get rid of all the paper," Klein added. ◗

JDEdwards®
Enterprise Software

It's happening in business circles everywhere. Vision is becoming reality. Inspiration is seeing the light of day. And cocktail napkin genius is finding a place in the real world.

That's the power of J.D. Edwards enterprise software. Designed for everything from big business to e-business, it's the only solution that allows you to put your ideas into action and painlessly make changes *after* implementation.

Enabling this newfound freedom is ActivEra,™ a suite of business tools and technologies that gives you the control and agility needed to thrive in today's unpredictable business climate.

Take it. Run with it. You'll be amazed at how far you can go. For more information, call (800) 727-5333 or visit us at **www.jdedwards.com**.

© J.D. Edwards World Source Company, 1999. J.D. Edwards is a registered trademark of J.D. Edwards & Company. The names of all other products and services of J.D. Edwards used herein are trademarks or registered trademarks of J.D. Edwards World Source Company.

Nasdaq Parent Outsources To EDS; Eyes Expansion

$1.5B-plus deal slated to save more than $500M over 10 years

BY THOMAS HOFFMAN

THE NATIONAL Association of Securities Dealers Inc. (NASD), which owns and regulates the Nasdaq Stock Market Inc., has outsourced the bulk of its information technology operations to Electronic Data Systems Corp. The agreement is expected to save the NASD more than $500 million over the next 10 years.

The contract, valued at between $1.5 billion and $2 billion, doesn't cover Nasdaq's IT operations, which are run primarily in-house. The agreement follows a technology alliance called NasTech that the NASD and EDS created last October.

Under the new contract, EDS will be responsible for application development and maintenance, Internet and intranet development, Web hosting, distributed systems support and NasTech's day-to-day activities. The pact was designed to support the NASD's daily operations and those of the NASD-R, the organization's regulatory arm. By July 1, 350 NASD and NASD-R IT employees will be transferred to EDS and will work from the NASD's technology center in Rockville, Md. EDS will also manage another 350 third-party consultants. About 20 IT employees will remain at the NASD to oversee IT architecture and planning activities, said Gregor Bailar, executive vice president and CIO at the NASD in Washington.

NASD's Gregor Bailar: The outsourcing will help the NASD expand into a "global market of markets"

Some analysts shrugged at the deal. "It would have been a [more important] deal if Nasdaq was involved," said Octavio Marenzi, research director at Meridien Research Inc. in Newton, Mass.

But Bailar and other NASD executives see the deal as an opportunity to help the NASD expand into a "global market of markets," Bailar said. In April, the NASD opened an office in Shanghai to support Asian companies that list on Nasdaq, and the market is exploring alliances with international exchanges such as the Deutsche Borse in Germany.

Under the contract, EDS will manage existing IT activities for the NASD and NASD-R and will also help support future developments such as the organization's possible expansion to extended trading sessions. Two weeks ago, the NASD's board of governors voted to approve an evening trading proposal [CW, May 31].

One of the first NasTech projects, launched this month, is a pilot program that would allow broker/dealers to file financial reports to NASD-R via the Web, according to Mary Schapiro, president of NASD-R.

It's not clear when that project will be completed because NASD is about to enter a "blackout" period for IT projects as part of an effort to keep its IT environment year 2000-ready, Schapiro said. ◗

NYSE to Delay Extended Hours

Directors at the New York Stock Exchange Inc. (NYSE) last week voted unanimously to delay extended trading hours until at least the middle of next year to allow Wall Street to complete its year 2000 projects and reprogram its trading systems to price stocks in decimals.

"We believe it is in the best interests of investors" to wait until after both the year 2000 date change and decimalization have been reached, said Richard Grasso, the exchange's chairman and CEO. Wall Street brokerages, stock exchanges and clearing houses are planning to convert their trading and settlement systems to set stock prices in decimals instead of fractions by the end of next year's second quarter.

On May 27, the NASD voted to extend its trading hours from 9:30 a.m. to 4 p.m. Eastern time with an extra session starting at 5:30 p.m. to 9 or 10 p.m. However, NASD Chairman Frank Zarb said it would be in the best interests of investors if Nasdaq coordinated extended trading hours with the NYSE.

– Thomas Hoffman

CORBA Brand to Ensure Compatibility for Vendors

Standards groups demand testing of new products

BY DAVID ORENSTEIN

Think of it as the Good Housekeeping Seal of Compatibility for CORBA.

Two standards groups will now compel vendors to undergo testing before they can carry the new Open CORBA brand. The brand ensures users of Common Object Request Broker Architecture (CORBA) middleware that products will work together interchangeably.

"It gives you a guarantee," said Wayne Haughey, a data integrity manager at Morristown, N.J.-based AlliedSignal Inc. "Prior to this, we never had that."

AlliedSignal has struggled in the past with different object request brokers (ORB) that didn't interoperate, he explained. CORBA branding will help companies avoid such pitfalls by assuring at least a baseline of functionality between different ORBs. It will be clearer to users what functions are proprietary, thereby locking them into a particular product.

Compliant Vendors

Today, The Open Group in Menlo Park, Calif., and the Object Management Group, the stewards of CORBA in Framingham, Mass., are expected to announce three vendors in compliance with the CORBA brand.

Iona Technologies PLC in Dublin, the world's largest CORBA vendor by revenue, said it intends to earn the brand as well.

Other user companies active in the standards bodies said they were pleased to see vendors responding to their need for interoperability and standards compliance.

The Boeing Co., for example, mostly uses Iona's object request broker. But after acquiring McDonnell Douglas Corp. and units of Rockwell International Corp., there are pockets in the company where other ORBs are used, according to Dan Klawitter, an advanced computing technologist at the Seattle-based aerospace company.

Boeing would also like to see the services layered on top of ORBs — such as transaction monitoring — to be interchangeable from product to product, Klawitter noted. The current branding program doesn't extend that far. ◗

Another Compaq Exec Leaves

Business PC Chief Rose was CEO candidate

BY MATT HAMBLEN AND JAIKUMAR VIJAYAN

Compaq Computer Corp.'s head of enterprise computing departed last week, the latest top-level executive to exit the embattled Compaq since CEO Eckhard Pfeiffer left in April.

John T. Rose, 53, joined Compaq in 1993 as head of the PC business division, after having left a similar job at Digital Equipment Corp. He was considered one of several candidates for the chief executive spot at Compaq.

COMPAQ'S JOHN T. ROSE left Digital Equipment in 1993

Rose's departure was a one-sentence mention in a press release announcing CIO Michael D. Capellas will become acting chief operating officer at Compaq. Capellas joined Compaq last August from Oracle Corp.

Appointing Capellas is "not a panacea for Compaq's problems," said Terry Shannon, editor of "Shannon Knows Compaq," a newsletter in Ashland, Mass. "There's still plenty of turmoil in Houston," he said.

On May 11, Compaq announced that John Rando, senior vice president of services would be departing. Rando came to Compaq in the Digital merger a year ago. ◗

NEED RELIABLE PRODUCT INTELLIGENCE? THEN YOU NEED . . .

THE SOFTWARE CIA.™

Want some straight answers about software? Do you suspect that the software experts favorable opinions are directly proportional to the amount of money vendors pay them? Have you ever wished for a Web search engine that spidered only software IT sites? One where you could share references, check ânormalized to YOUR evaluation criteria? Free of charge? Welcome to www.KnowledgeStorm.com,™ The Software CIA.™

Want to keep your privacy? Fine. Want to list yourself as a reference, but only for five inquiries per month? That's fine, too. Want to request information from a vendor, and then submit your grade on that vendor's responsiveness? We'll aggregate those grades and make them public.

You might wonder how we make money. Simple. If you request information from a specific vendor, we make sure the right sales professional in the office closest to you gets your request. Software vendors pay us for this service.

Check out our Web site. We think you'll put it at the top of your browser's bookmarks. And we think you'll visit us often.

KnowledgeStorm.com™
The Software CIA

© 1999 KnowledgeStorm.com. KnowledgeStorm.com, its logo, Demand Marketing and The Software CIA are trademarks of KnowledgeStorm.com. Our use of Gartner, Giga and Meta trademarks is the least of their problems. TRBA

BRIEFS

2,000 Products Not Year 2000 Tested

Close to 2,000 hardware and software products have yet to be tested for year 2000, according to Infoliant Corp., a Pittsburgh software vendor that tracks statistics regarding Y2K compliance. Another notable detail in Infoliant's May report is an increase from 8% to 15% in those products that vendors have decided not to test.

Sears Buys Web Ads

Sears, Roebuck and Co. said last week that it's now the largest advertiser on Microsoft Corp.'s Home-Advisor online real estate site. The companies announced a two-year deal for an undisclosed sum for Sears to advertise on all of Microsoft's Internet sites under the MSN brand name.

CA Seeks ERP Brand

Computer Associates International Inc. last week changed the name of its enterprise resource planning (ERP) software unit, from Prestige Software to InterBiz Financial Group. The Islandia, N.Y., vendor made the change to establish a common brand name for its applications and compete with the likes of SAP AG and Oracle Corp.

GTE Offers Web Store-Creation Plan

GTE Corp. in Stamford, Conn., last week announced GTE E-Commerce Solutions, which will offer services to help businesses create online stores without hardware or software. Service plans start at $39.95 per month.

Short Takes

COMPAQ COMPUTER CORP. made its PCI-X bus technology source code available at *www.compaq.com/pci-x*. . . . RESTRAC INC., the Lexington, Mass.-based software company that makes résumé-tracking and recruitment systems, has changed its name to WEBHIRE INC. . . . SUN MICROSYSTEMS INC. has released the 1.0 specification of its JavaServer Pages technology.

First Union Readies Internet Strategy

With $150M investment, it joins rivals in using e-commerce as growth vehicle

BY STEWART DECK

FOLLOWING in the footsteps of its larger banking rivals, First Union Corp., the nation's sixth-largest bank, is readying a newly revamped Internet strategy and Web site as part of a $150 million Internet investment.

When the Charlotte, N.C.-based bank unveils its e-commerce strategy later this month, it will be following the lead of Columbus, Ohio-based Banc One Corp. The nation's fourth-largest bank announced its own e-commerce road map just last month. Both banks have publicly sworn off acquisitions as the road to future growth and are now looking instead to the Internet to fill that role.

Edward Crutchfield, First Union's chairman and CEO, recently said that the days of growing through acquisitions are mostly over for First Union. A stronger Internet and e-commerce presence will be essential to future growth, he added.

First Union currently offers online bill payment, brokerage services, investment account management and personal bank account information services. Under the revamped strategy, it will add more personalization and functionality to its online banking site (*www.firstunion.com*), especially in the home mortgage and securities trading areas.

Top First Union executives, from the chief technology officer to the director of electronic channels, either declined to comment on the bank's pending plans or didn't return calls. But spiffing up bill paying capabilities and enhancing online trading services are the types of things competitors like Banc One have recently done. Some industry watchers have speculated that First Union may even soon spin off some of its Internet assets into a stand-alone company, perhaps by combining electronic banking and online trading into one company.

"Many banks have everything that discount [stock] brokers have, but they haven't been aggressive in marketing it," said Ron Mandle, an analyst at Sanford C. Bernstein & Co., a New York investment bank.

That's about to change. Over the next six to 12 months, customers will see several new and more robust banking Web sites offering a broad range of investment, loan and deposit products, according to Mandle. The ability to pay bills online will be a key feature of such sites, he added.

"Bill presentment and payment is the engine that will drive that growth," agreed Robert Landry, an analyst at Tower-Group in Needham, Mass. ◗

JUST THE FACTS

First Union

- **The sixth-largest bank in the U.S.**
- **The third-largest online banking customer base**
- **Has 700,000 online banking customers**

Fleet Embraces IT Process Improvement

Adopts model others see as too demanding

BY DAVID ORENSTEIN

Fleet Financial Group's IT unit, Fleet Technology Solutions, has become such an enthusiastic adopter of Carnegie Mellon University's software development improvement model, it has developed its own Web-based tool to track its progress and is thinking about bringing the tool to the marketplace.

For the past year, the group's developers have been transforming the way they develop software by adopting Carnegie Mellon's Capability Maturity Model (CMM). Used widely by the military, defense contractors and systems development companies, CMM has often struck corporate information technology as too demanding a discipline to be worthwhile, analysts said.

CMM encourages users to replace the chaos that typically reigns in corporate development organizations with a rigorous adherence to an efficient process. CMM has five levels, beginning with Level 1, where the process is chaotic. A few serious adopters eventually reach the well-structured fifth level, where project delivery times and costs are substantially reduced.

Some benefits come sooner, however. A Gartner Group Inc. survey in 1997 showed that companies that resembled Level 2 or 3 under CMM's criteria had a 30% productivity advantage over most companies, which have characteristics of Level 1, said Gartner analyst Matt Light.

Fleet started at that first level, said Jane Duran, one of 10 members of Fleet's Software Engineering Process Group, which was founded to implement CMM. At Level 1, she said, "productivity is based on heroes . . . the guys who were here at 2 a.m."

Now the Boston-based company encourages teams that stick to a well-defined process. A reward system to reinforce the new focus is in the works, Duran said.

After a year under CMM, some teams have nearly hit Level 2, where there's enough adherence to process that their performance can at least be predictable. Predictability, Duran said, translates to more reliable service.

Although the merits of bringing structure to critical projects seems obvious, only about 15% of IT shops embrace CMM, estimates software productivity guru T. Capers Jones. Light estimated that maybe 20%, Fleet included, adopt a modified version of CMM to fit their needs. ◗

Cabletron CEO Benson Resigns

BY BOB WALLACE

Cabletron Systems Inc. cofounder and CEO Craig Benson stepped down Friday in a move executives said would help the struggling internetworking vendor focus on Internet and telecommunications service providers.

Benson, 46, was replaced by Piyush Patel, 43, who had been Cabletron's senior vice president of worldwide research and development. Patel, Cabletron's fourth CEO in about two years, also becomes chairman of the board.

Patel is widely known as the former CEO of Yago Systems Inc., where he developed an advanced routing switch. Cabletron bought Yago in January 1998.

Patel said he will move aggressively to attack the service provider equipment market, which he said offers the most potential for growth. The company will continue to offer LAN switches.

CRAIG BENSON yields to a technology guru

Craig Johnson, president of PITA Group, a Portland, Ore., consultancy, said he applauded the move because,. as CEO, Benson "failed to execute." He said that Benson opposed a sale of Cabletron and that observers will wonder if his departure means "the company may be put up for sale, or will they really hunker down on the networking business and try to become a more successful player?" ◗

IF YOUR WEB SITE CAN'T PERFORM, THERE ARE ALWAYS OTHER WAYS TO COMMUNICATE.

These days, you can't afford to have your Web site send the wrong signal. Not when you depend on it for business-critical communications. That's why over 1,700 leading companies trust UUNET, an MCI WorldCom℠ Company, to host their complex sites. After all, we've built a highly advanced hosting environment supported by the world's most expansive global IP network. Which means you can rely on our expertise to deliver superior site availability and response time. [illegible] commitment to application hosting, UUNET's capabilities are simply unmatched. So call us at 1 877 588 1570 or visit www.info.uu.net/host3 to ensure your Web communications don't go up in smoke.

UUNET
An MCI WorldCom Company

THE WORLD'S INTERNET COMMUNICATIONS COMPANY

[illegible]

New Payment Service Safeguards Content

System prevents unauthorized Net copying

BY ANN HARRISON

COMPANIES trying to generate repeat revenue from copyrighted material downloaded from the Internet will soon be able to use a micropayment system that prevents unauthorized copying.

National Westminister Bank PLC's (NatWest) new service, called Magex, offers copyright protection for online content and simplifies the process of collecting and processing payments for digital products such as music and documents.

So far, most online content providers sell material via password-based subscription services that don't protect material from being copied after it's downloaded. Magex, which will be available in October, provides companies with software that secures digital content — such as music, books, games and reports — in an encrypted wrapper called Digibox. The content is packaged with a flexible set of business rules that let firms govern the price and usage of the material.

Consumers who select the content receive the Magex software for their local PC. The software opens the container and presents access, use and payment options. The Magex system then withdraws payment from the user's "software wallet" and distributes payments to content providers. If digital content in the Digibox is sent to other people, they must register with Magex to download the software that opens the content.

London-based Reuters Group PLC, Dun & Bradstreet Corp. in Murray Hill, N.J., and Equifax Inc. in Atlanta plan to sell products via the system. Magex is based on technology created by InterTrust Technologies Corp. in Sunnyvale, Calif., which developed the MetaTrust Utility, a digital rights management system.

NatWest's Magex announcement echoes recent moves made by several banks to become e-commerce middlemen. NatWest will use Magex in a financial clearing service that routes e-commerce payments. The system can handle financial transactions as little as a few cents, thus giving content providers microtransaction revenue streams that had been uneconomical to process.

John Mitchell, chief marketing officer at Equifax Europe in London, said his company plans to secure reports on U.K. firms with Digiboxes to sell the data online. Equifax pays a 10% to 25% royalty for reports to CompuServe and could pay similar royalties to Magex and portal sites — depending on the volume of reports sold.

Mitchell said the Magex system provides not only a payment mechanism, but the ability to charge different prices for viewing or printing data.

"It opens up a whole new way of distributing and pricing," Mitchell said. "I can reward loyalty and give customers discounts without having to set up complicated loyalty schemes." ◗

Intel Price Drop

CHIP	MAY 1999	SEPTEMBER 1999
450-MHz Pentium III	$268	$213*
433-MHz Celeron	$143	$113*

[illegible]

Celeron Chip May Draw Fortune 500 Interest

Pentium III pricing $100 to $200 more

BY MATT HAMBLEN

Prices for Intel Corp.'s Pentium III processor are quickly heading downward, but analysts last week predicted they will remain $100 to $200 more than Intel's Celeron processors by year's end.

That means Celeron could continue to be an attractive alternative for many Fortune 500 companies despite its reputation as a bargain-basement consumer model, analysts said.

Analyst Rob Enderle at Giga Information Group Inc. in Santa Clara, Calif., predicted Pentium III could cost $200 more than Celeron by year's end. A PC equipped to handle the Pentium III would therefore cost $500 more than a Celeron machine — and "that's a huge difference when a corporate manager might not want to pay $1 more if he's ordering 1,000 machines," he said.

Users and some PC makers such as IBM have realized the value of the Celeron, especially for businesspeople who use their PCs for word processing and database access and don't need the Pentium III's added speed and reliability for Web browsing or graphics.

In March, an Intel spokeswoman predicted "an aggressive ramp-up" to Pentium III sales, with price reductions by August and a phasing-out of the Pentium II [CW, March 22].

Last week, Intel spokesman Chuck Mulloy denied that Intel is offering "deep discounts" of 40% to small PC makers for the Celeron and Pentium III, as reported elsewhere. But he did say Intel has been more competitive than in past years because of growing competition.

Were it not for the threat posed by AMD Inc. in Sunnyvale, Calif., Intel wouldn't have created the Celeron line, analysts said. Ashok Kumar, a financial analyst at US Bancorp Piper Jaffray in Minneapolis, predicted that matching AMD's chip models and pricing won't hurt Intel's earnings.

Unlike some other analysts, Kumar said the Pentium III won't be supplanted by the Celeron at large businesses because many of them want desktops to last three years, so they install the "latest and greatest" at the beginning of that cycle.

Enderle said the Pentium III performs well with Intel's 820 chip set, due this fall, based on his tests. The 810 chip set, due this month, has shown some performance problems in tests, Intel and PC makers said. ◗

When Hackers Get Hacked

Scrappy site weathers attack that felled FBI

BY ANN HARRISON

Operators of a computer security Web site called AntiOnline last week claimed they had successfully repelled the same type of attack that forced the FBI to shut down its Web site for a week.

AntiOnline (*www.antionline.com*) is a security Web site frequented by systems administrators and the hacker underground. It was one of many sites targeted in the hacker backlash against the FBI's ongoing sting operation against suspected computer crackers.

But unlike the FBI site, which just last week installed a dedicated firewall, AntiOnline was able to fend off a deadly, denial-of-service attack that has become the scourge of commercial Web sites. Denial-of-service attacks bombard routers, T1 or T3 lines with data packets that prevent users from accessing the site.

Rusty Carpenter, a spokesperson for IBM Global Services, which hosts the FBI Web site, said such an attack was launched against the agency May 26 and lasted several days. After asking the FBI to shut down the site, Carpenter said, IBM deployed filters throughout its network to block packet traffic, asked partner MCI WorldCom Inc. to set up its own filters and took IBM's entire network down to purge corrupt packets and take the FBI server off-line.

"Never in the years that I've been here has [IBM] experienced an attack this massive," Carpenter said. He said the FBI site would be back online this week with its own dedicated firewall.

Network managers at AntiOnline fought the denial-of-service attack by spreading the rogue packets among various devices, which limited outage time to 3 hours, 45 minutes.

Site founder John Vranesevich said 25% of the incoming packets were blocked at the router with a Cisco Systems Inc. IOS Enterprise Plus TCP/IP intercept system. About half the packets were let back into the network but were disabled by an Internet Security Systems Inc. RealSecure network monitoring station. The rest of the packets rammed the AntiOnline servers.

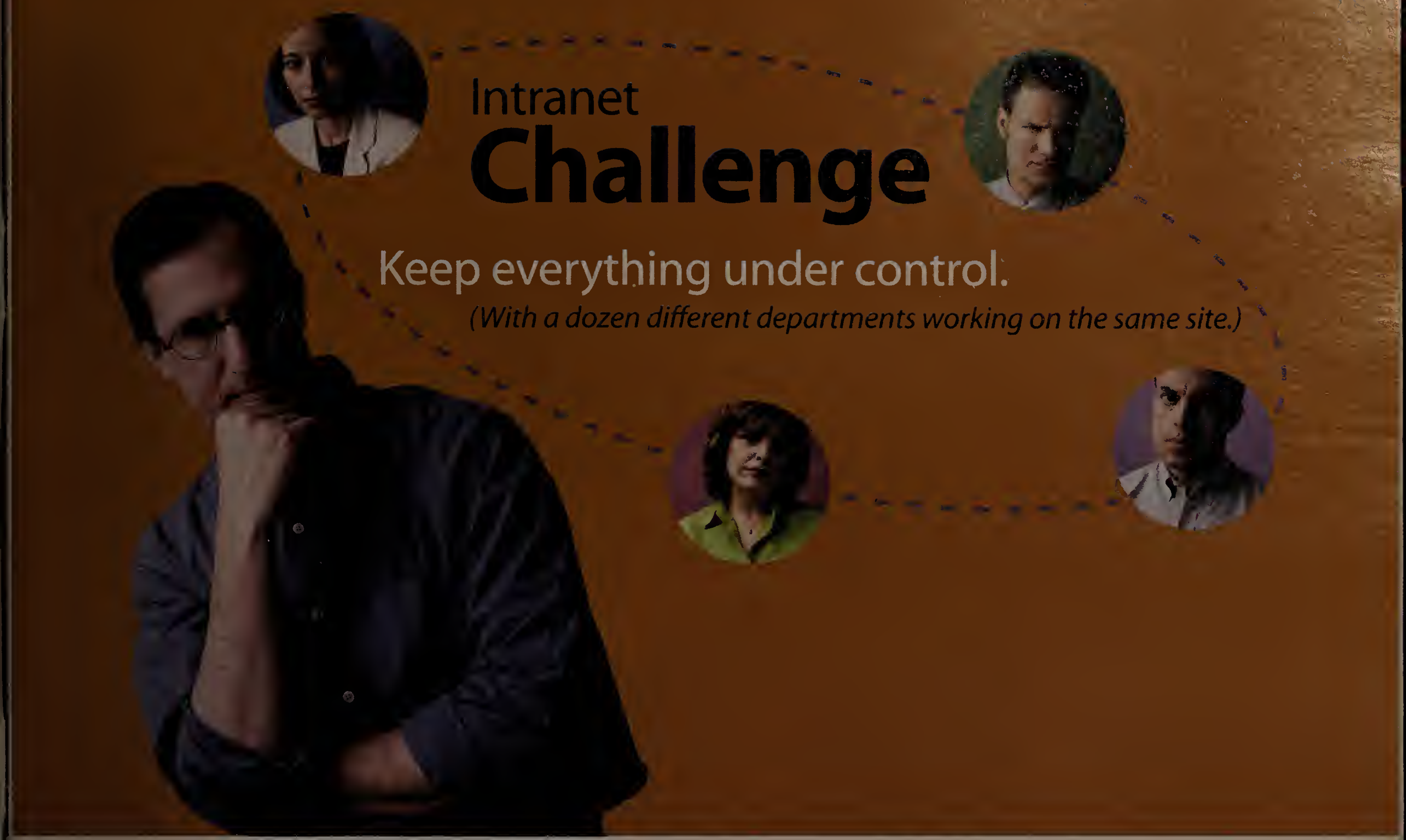
Although the FBI attack involved 10 times as many packets, Vranesevich said, his site was able to fight back with only modest equipment. "It's a matter of balancing resources," he said. ◗

Recent Hacks at Government Web Sites

June 1	Brookhaven National Labs (*www.bnl.gov*)
May 31	Department of the Interior (*http://nbcsun2.los.doi.gov*)
May 27	U.S. Senate (*www.senate.gov*)
May 20	Vermont state government (*www.state.vt.us*)
May 10	White House (*www.whitehouse.gov*)

MOREONLINE

For articles, publications and other resources on security, visit our Web site.
www.computerworld.com/more



Intranet
Challenge

Keep everything under control.
(With a dozen different departments working on the same site.)

Intranet
Solution

NetObjects Authoring Server. It's the only collaborative Web authoring solution for corporate intranets. You have complete, end-to-end control, assigning privileges according to skills and responsibilities. Eliminate training headaches and Webmaster bottlenecks, because it's a cinch for colleagues to use. You easily integrate legacy data, applications and systems. And you become the intranet hero with help from our Professional Services team.

Want a full briefing? Check out our online demo at **www.netobjects.com/info/nasdemo,** or call **888-892-0702 dept.103** now to order your free demo CD, or to arrange an initial consultation.

NETObjects®

e-business

©1999 NetObjects Inc. All rights reserved. NetObjects is a registered trademark, and the NetObjects logo is a trademark of NetObjects, Inc. All other brand and product names may be trademarks or registered trademarks and are the property of their respective companies.

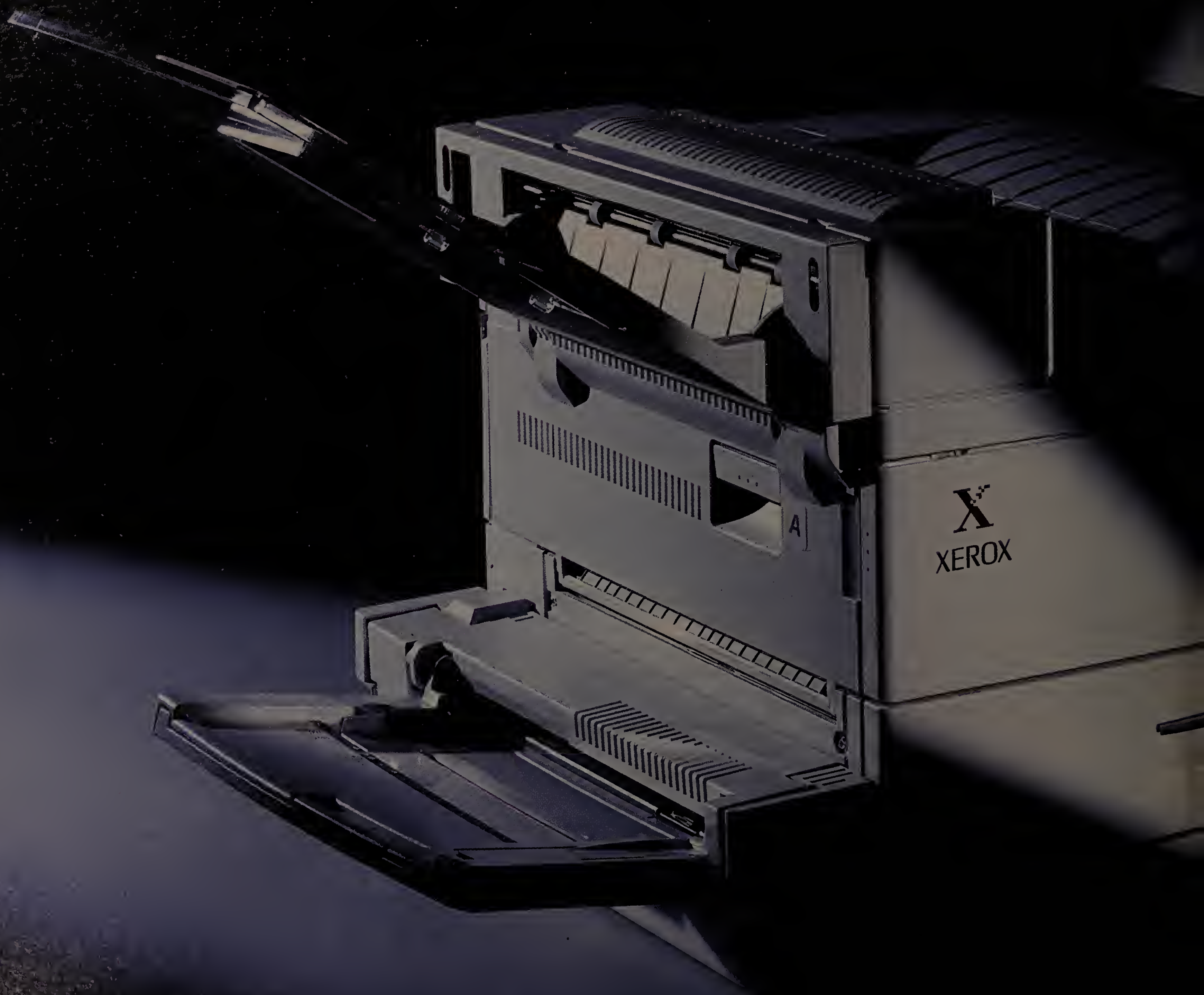
FREE DEMO CD FREE DEMO CD

ANCIENT DILEMMA

YOU WANT TOP PERFORMANCE.

YOU DON'T WANT TO PAY TOP DOLLAR.

IT'S CALLED BEING SMART.



1-800-34-XEROX www.xerox.com

[illegible] Company, the digital X, Keep the Conversation Going Share the Knowledge., WorkSet DocuPrint and N40 [illegible] Corporation. HP and LaserJet are trademarks of the Hewlett Packard Co

xerox solution

AT 40 PAGES PER MINUTE, THE XEROX DOCUPRINT N40 NETWORK PRINTER IS 25% FASTER THAN THE FASTEST HP LASERJET PRINTER, AT A VERY COMPETITIVE PRICE. WE CALL THAT BRILLIANT.

KEEP THE CONVERSATION GOING.
SHARE THE KNOWLEDGE.

DIGITAL
THE DOCUMENT COMPANY
XEROX

Merrill Lynch Bows to Low-Cost Net Trading

Significant cultural, technological challenges lie ahead for brokerage firm

BY THOMAS HOFFMAN

Now that America's biggest investment bank has finally announced plans to offer low-cost Internet stock trading, a price war is likely to escalate among the lowest-cost online brokers, and the pressure is on for traditional, full-service brokers to get into the game.

Merrill Lynch & Co.'s service, which observers have pushed for months, won't be introduced until December and will be considerably more expensive than the $8.95-per-transaction rate that online upstarts like Suretrade Inc. have been charging.

But Merrill Lynch's $29.95 charge for buying or selling up to 1,000 U.S. stocks matches that of online market leader Charles Schwab & Co. in San Francisco, whose own cybergrowth propelled its market-cap value past the venerable New York-based full-service broker last December.

M
ILL LYNCH
3RIEFINC
1, 1999 ·

THE ASSOCIATED PRESS

CHAIRMAN AND CEO DAVID KOMANSKY believes that Merrill Lynch's wealthiest investors will continue to pay the firm's brokers for advice

"The big loser here is Schwab, since they're charging customers a premium for their name, and Merrill has a bigger name and a lot more research to offer," said Octavio Marenzi, research director at Meridien Research Inc., a Newton, Mass.-based financial services research firm.

Still, Merrill Lynch, the world's biggest brokerage firm, will have to work through some significant cultural and technological issues to make its strategy work.

Even though the firm has created a separate division to support low-cost Internet trading, the company still has to reassure its 14,000-plus brokers that online trading won't eat into their commissions. "Clearly, there will be financial consultants who will be concerned about the impact that low-cost online trading might have on their commissions," said David Komansky, the company's chairman and CEO.

Keeping Brokers Happy

But Komansky and other observers believe Merrill's wealthiest investors are willing to continue to pay the firm's brokers for their advice. Merrill Lynch "needs to keep its brokers happy," because brokers who leave often take up to 50% of their customer accounts with them, said Larry Tabb, an analyst at TowerGroup in Needham, Mass.

> “
> Merrill has a bigger name and a lot more research to offer.
>
> OCTAVIO MARENZI, RESEARCH DIRECTOR, MERIDIEN RESEARCH INC.

Still, with one out of every seven stock trades being executed online, Merrill Lynch could no longer turn the other cheek. In February, the firm acquired D. E. Shaw Financial Technology LP, a Cambridge, Mass.-based developer of Internet technologies for the financial services industry. A month later, Merrill Lynch began offering online trading to customers with assets of more than $100,000.

Game Positioning

Merrill Lynch plans to draw from D. E. Shaw's programming and architectural expertise and "blend" that with its online business unit in Princeton, N.J., said John McKinley, the company's chief technology officer. The combination of the two, "positions us well to win this game," he said.

Although he declined to specify how much money the company is investing in online trading, McKinley said the figure was "substantial" and that it was "our number one initiative" next to the $520 million the company has committed to its year 2000 program.

The brokerage decided to wait until December to roll out the low-cost trading service in order to sign up a critical mass of customers and make sure it could build an infrastructure and ensure that its call centers and support staff could handle the heavy volumes of traffic it's expecting, McKinley said. ◗

IT Projects Avoid Battle Zone Abroad

Kashmir conflict poses little threat

BY BARB COLE-GOMOLSKI

Industry observers last week said the recent conflict between India and Pakistan poses little threat to U.S. companies that have outsourced information technology projects to India-based firms.

"At this point, there seems to be little cause for alarm [for companies that have outsourced IT projects to Indian software developers]," said Bill Martorelli, an analyst at Hurwitz Group Inc. in Framingham, Mass. That could change if the conflict escalates, he said.

For a few weeks, India has been battling an Islamic insurgence in Kashmir, a region that both India and Pakistan claim. Guerrillas that India says are supported by Pakistan have pushed into the India-controlled portion of the region.

"The [Kashmir] area is remote and far away from where most of the software firms are located," said Vinayak Karnataki, manager of development at Aditi Corp., a Bellevue, Wash.-based software company. Aditi has offices in Bangalore, India, a hotbed of software development more than 2,000 miles from Kashmir.

Observers doubted the conflict will damage India's telecommunications infrastructure. Even if it does, many India-based software firms rely on satellites to link with their U.S. clients, analysts said. ◗

Equifax Unveils Partnership With Sun/Netscape Alliance

Netscape to deliver Equifax services

BY NANCY DILLON

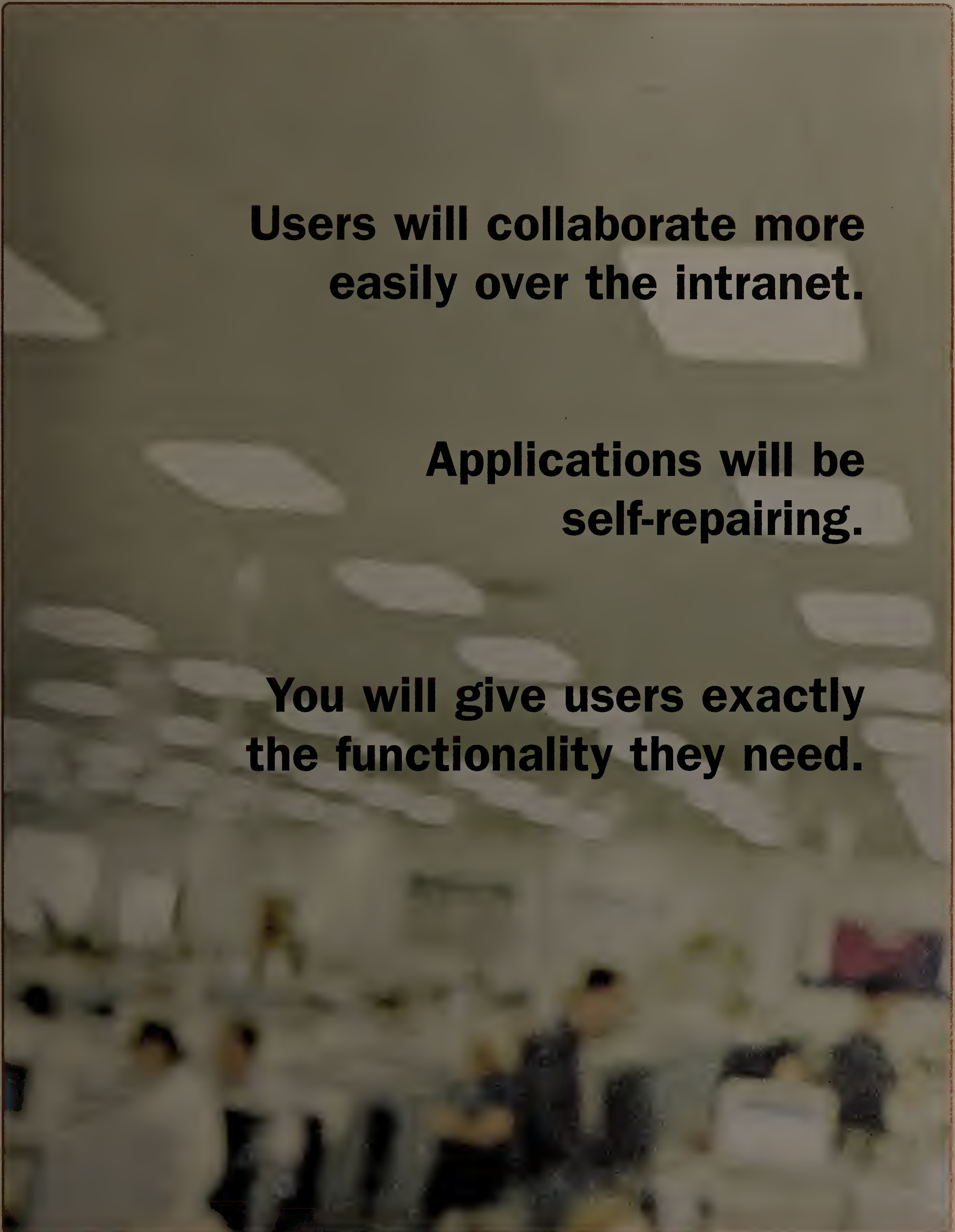
Equifax Inc. last week announced a partnership with the Sun/Netscape Alliance under which Equifax will use Netscape software to deliver its identity verification service. The Sun/Netscape Alliance, in turn, will resell the Equifax package that lets users access Equifax's authentication services.

Atlanta-based Equifax is a credit-verification company with a service that helps companies confirm customer, supplier and partner identities during Internet transactions.

In the second half of this year, Equifax will begin offering directory-based certificate management using Netscape Communications Corp.'s Directory Server software. At the same time, Equifax's authentication module will be available for use with Netscape Certificate Management System 4.0 — software for issuing and managing digital certificates.

Equifax already issues and manages certificates using IBM's Vault Registry digital certificate software. But last week's announcement "will help [Equifax] appeal to a different market segment: users who don't have an IBM mainframe or minicomputer technology base," said Phil Schacter, an analyst at The Burton Group Corp. in Midvale, Utah.

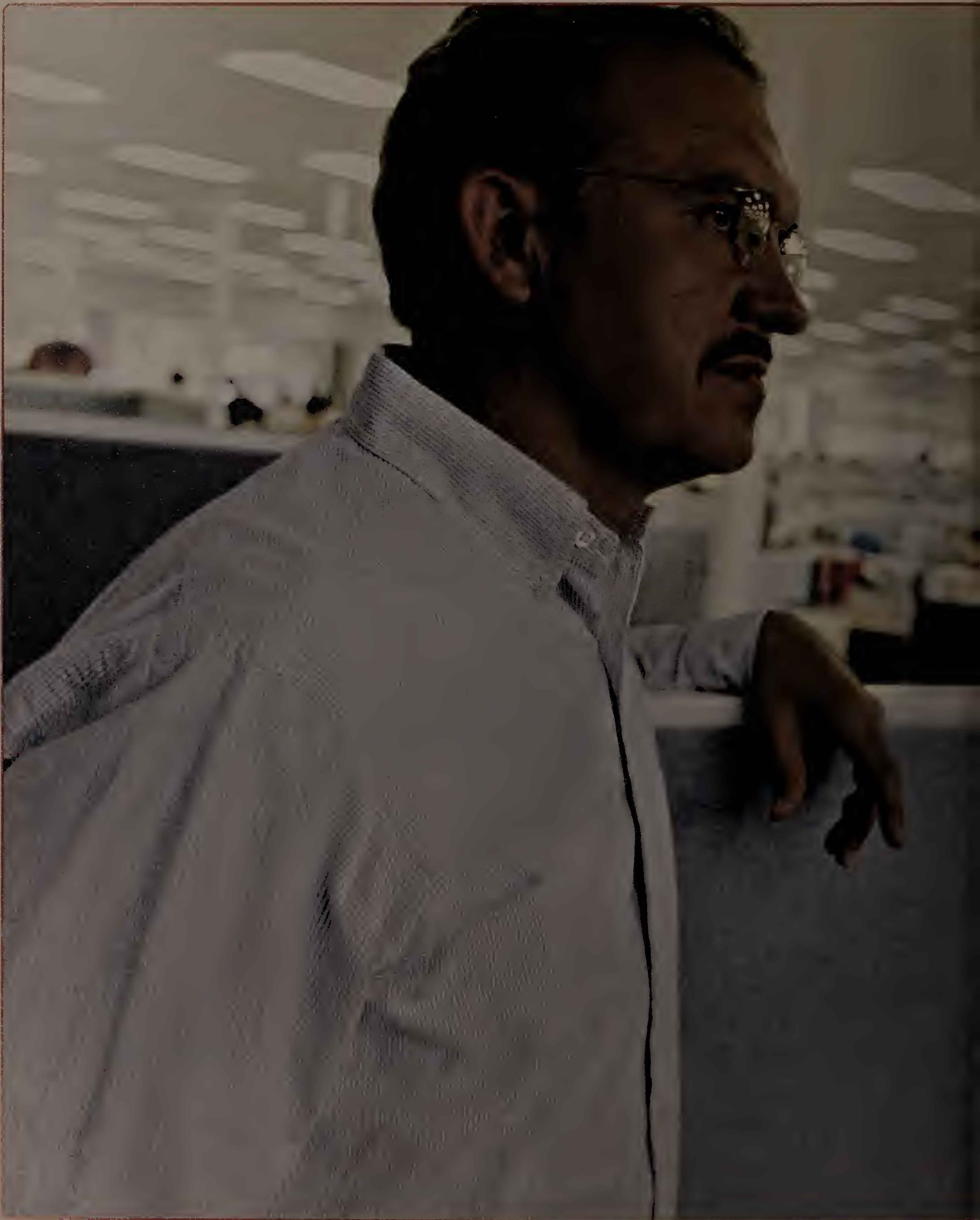
"The Netscape software will be considerably more affordable to smaller companies without an IBM investment," Schacter added. ◗



Users will collaborate more easily over the intranet.

Applications will be self-repairing.

You will give users exactly the functionality they need.



Where do you want to go today?® **Microsoft**®

Introducing Microsoft Office 2000.

Users have the power. You have the control.

With Microsoft® Office 2000 and your intranet, you can enable your users to collaborate more easily using tools that they—and you—already use every day. That's because HTML is now one of the Office file formats, so users can share information with anyone, anywhere, over your intranet. Add great features like Windows® Installer and the Custom Installation Wizard that improve deployment and manageability, and you have the perfect balance of user power and IT control. To see for yourself how Office 2000 can give you this balance, go to

http://www.microsoft.com/office/IT

Microsoft® **Office**2000

What Productivity Means Today

Now with Microsoft Office 2000 you have:

- The ability to post any document instantly to your intranet and maintain rich Office functionality in the browser
- Applications that automatically repair themselves when a user mistakenly deletes a file or a file becomes corrupted
- Customizable Installation so you can give users exactly the Office functionality they need, when they need it

© 1999 Microsoft Corporation. All rights reserved. Microsoft, the Office logo, Windows, and *Where do you want to go today?* are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

DOJ Out to Prove Consumer Harm

Rebuttal phase of Microsoft trial to turn on economic theories

BY PATRICK THIBODEAU
WASHINGTON

THE OUTCOME of the Microsoft Corp. antitrust trial rests in large part on a battle between two dueling economics professors. The main issue between them: Has Microsoft hurt consumers and corporate customers?

MIT economist Franklin Fisher, who testified last week for the U.S. Department of Justice, knows his opponent well. Richard Schmalensee is a former student of Fisher's who is now dean of MIT's Sloan School of Management.

But that connection didn't earn Schmalensee any break. On the stand last week, Fisher questioned his former student's economic analysis, judgment and data, characterizing various parts as "muddled" "mixed up," "confused" and even "ridiculous."

PATRICK THIBODEAU

ATTORNEY DAVID BOIES: Trying to prove Microsoft hurt customers

For instance, lead government prosecutor David Boies asked Fisher about Schmalensee's earlier testimony that he couldn't show how profitable Microsoft's operating system is because Microsoft records sales by hand on sheets of paper. To that, Fisher said that Schmalensee, "with his usual good nature, was rather credulous."

The rebuttal phase of the trial began last week after a 13-week recess to allow U.S. District Judge Thomas Penfield Jackson to hear an unrelated case.

Fisher, the first of three government rebuttal witnesses, said Microsoft has used monopoly power to harm consumers "by limiting choice." By giving away Internet Explorer, for instance, Microsoft stamped out Netscape Communications Corp.'s browser as a potential threat.

Schmalensee will get his turn on the witness stand later this month.

He will argue that Microsoft's decision to give away its browser benefited consumers, that Microsoft isn't a monopoly and that hasn't hurt consumers because it must constantly worry about potential threats from Linux, network computers and future technology shifts.

Some users agree. Microsoft is where it is today because "they push themselves to stay ahead of the competition," said Mike Ermis, manager of systems technology at CTB Inc. in Milford, Ind. CTB makes automated feeding, watering and ventilation systems. Ermis acknowledged that competitors aren't close to unseating Microsoft because of the large number of Windows applications.

But Microsoft's future isn't assured. Something like Linux "may pick up momentum a lot faster than a lot of us would ever believe," said Prentice Ethington, an MIS project manager at a truck manufacturer.

But Ethington said he likes the common standards that Microsoft's dominance has brought to the industry. "I don't have any problems with Microsoft, so I'm not looking for a replacement," he said. ◗

Federal Reserve Exec Expects Few Year 2000 Bank Problems

BY NANCY DILLON
SAN FRANCISCO

More than 98% of the Federal Reserve's mission-critical systems are now classified year 2000-compliant, and the remaining 2% should be compliant by the end of this month, according to Robert Parry, president of the Federal Reserve Bank of San Francisco.

In his first speech about year 2000, given before about 100 people at the Commonwealth Club of California, Parry said he's "confident" that banking services such as automated teller machines, debit cards, credit cards, direct payments and direct deposits will operate normally on Jan. 1, 2000.

But, he was careful to point out that "probabilities aren't certainties" and that he "wouldn't be surprised if there were some disruptions here and there."

Bonnie Allen, Parry's assistant vice president in charge of domestic banking supervision, said 97% of member banks and holding companies regulated by the Fed are making "satisfactory progress," and that the remaining 3% will receive a lot of attention during the next few months. She said federal examiners are going to spend the second half of this year doing follow-up examinations of the more than 10,000 banks that the Fed supervises nationally.

During the second and third quarters, some of the most severe cases of Y2K noncompliance could be made a matter of public record, she said.

Parry said his biggest Y2K-related concern is the possibility of "irrational" behavior on the part of consumers. But he said he was heartened by a Gallup Organization poll in March that found that only 9% of Americans surveyed expected major problems with their finances because of year 2000. That was down from 14% last December. ◗

Expert: Systems Are Vulnerable During Staff Holidays

Paper trail can foil hackers in court

BY NANCY DILLON

It's a holiday weekend, and you're relaxing at home, when suddenly your pager tells you to check your network.

You try to log in to the network from home, but it doesn't seem to work. You hurry into the office and find that your computers are rebooting for no apparent reason. Your firewall keeps shutting down. The problem doesn't appear to be hardware-related. And network traffic is passing through your firewall.

Suddenly it becomes clear: You're being hacked.

That was the scenario created by computer security consultant Stephen Northcutt during a briefing last week titled "What the Hackers Know About You: Anatomy of a Christmas '98 Attack." The webcast was sponsored by the SANS Institute, a research and education organization in Bethesda, Md. Holidays are "a high-risk time since systems are unattended," Northcutt said, so administrators should shut down as many nonessential systems as possible.

Northcutt also warned against the common assumption that hackers are less sophisticated than administrators at Fortune 1,000 companies. A typical hack job, according to Northcutt, can involve both software development and unauthorized software installation on target systems. "Plus, hackers have a technical support structure that's probably more comprehensive than the one available to your organization."

In the event of a hacking incident, administrators should remain calm and notify management, according to presentation material supplied by the SANS Institute.

Administrators should avoid using e-mail and other network-based communications. They should take good notes — good enough to serve as evidence in a court of law. It's also important to run a backup copy of the damage for evidence before restoring systems.

Administrators can try implementing file integrity assessment systems to catch hackers before they "make a kill," Northcutt said. File integrity assessment tools detect changes in file systems and alert administrators when strange things start happening in the file systems, such as shrinking log files. ◗

Security Blunders

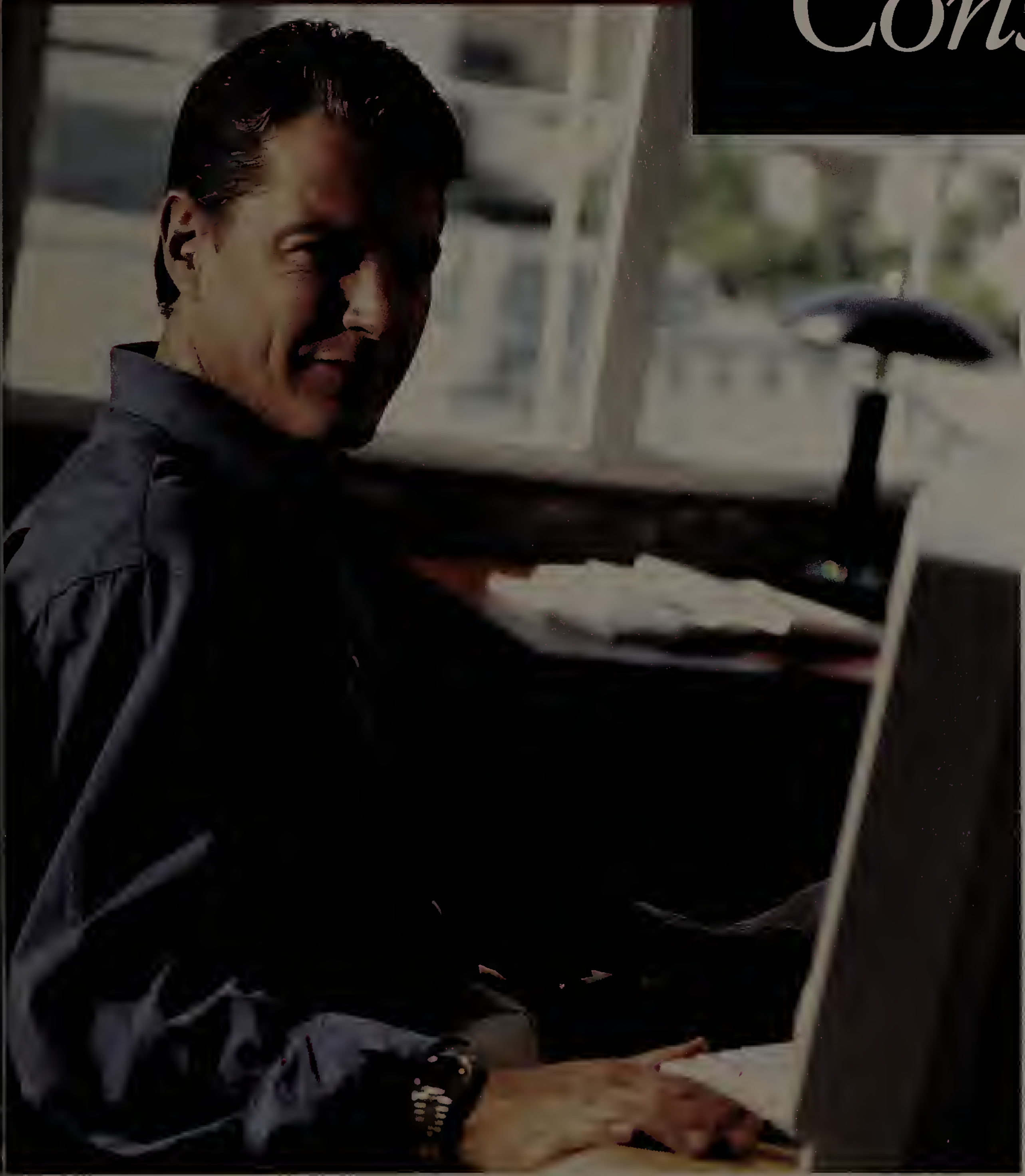
Among the top management errors that lead to computer security vulnerabilities:

- **Pretending** the problem will go away if you ignore it.
- Authorizing reactive, **short-term fixes** so that problems re-emerge rapidly.
- Failing to realize how much money **information and organizational reputations** are worth.
- Relying primarily on a firewall.
- Failing to understand the **relationship** of information security to the business.
- **Assigning untrained people** to maintain security and providing neither the training nor the time to make it possible to do the job.

SOURCE: SANS INSTITUTE, BETHESDA, MD

You need to deploy business-critical applications to users around the world.

Consider it done.



Today, thousands of enterprises agree: server-based computing is a fast, flexible and cost-effective way to deploy business-critical applications to users around the world.

With Citrix® server-based computing software, you can deliver the latest HR, customer billing, ERP, personal productivity or other applications to multiple locations, regardless of client hardware. And since it can be done in hours instead of weeks, Citrix is an excellent solution for deploying Y2K-compliant applications. Which means you save money and increase productivity because now, everyone in your organization can access any application, anywhere, anytime.

To learn how you can make everything in your enterprise compute, get your FREE *Server-based Computing* white paper today.

FREE Server-based Computing white paper!
See how you can get fast, flexible and cost-effective application deployment.
Call 888.415.4305

Server-based Computing
citrix

Now everything computes.™

CITRIX®

© Copyright 1990–1999 Citrix Systems, Inc. All rights reserved. Citrix is a registered trademark and "Now everything computes." is a trademark of Citrix Systems, Inc.

MANUFACTURING

MANUFACTURING.EPICOR.COM

DISTRIBUTION

DISTRIBUTION.EPICOR.COM

ACCOUNTING

ACCOUNTING.EPICOR.COM

CUSTOMER RELATIONSHIP
MANAGEMENT

CRM.EPICOR.COM

E-COMMERCE

ECOMMERCE.EPICOR.COM

BUDGETING, PLANNING
& ANALYSIS

BUDGETING.EPICOR.COM

MRO

MRO.EPICOR.COM

Most ERP applications are implemented

with about this much

ACCURACY

efficiency and

FLEXIBILITY

Introducing Epicor, the company with business solutions for the rest of us.

Thinking about implementing a typical enterprise system? Better brace yourself. Because, frankly, most enterprise applications weren't designed with your business in mind. So if you force one of those systems onto your business today, you may be picking up the pieces tomorrow.

That's why Platinum Software and DataWorks have joined forces to create Epicor Software Corporation, a global leader in developing business performance solutions aimed solely at companies like yours.

At Epicor, our unique focus helps you leverage your limited resources and overcome your growing pains, without wreaking havoc on your business. To do that, we offer award-winning business solutions for both front and back office. So you get just what fits your needs, instead of some no-pain-no-gain solution.

Call 1-888-9-EPICOR or visit www.epicor.com today to receive a corporate brochure. Get to know us first, before the wrong enterprise system comes knocking.

epicor™

1999 Epicor Software Corporation. Epicor is a trademark of Epicor Software Corporation.

MAIN ST
e-BUSINESS
DISTRICT

HOW DO YOU GET THERE FAST?

With software technology from SEAGULL, you can be up and running in the world's new business center quickly; providing suppliers, customers, channels and employees with Web-based direct access to core business applications on mainframe and AS/400 platforms.

Many of our customers' e-business initiatives are fully implemented within 45 days of product purchase.

Now you can isolate specific processes in your business applications, integrate them with other functionality (new or existing), and deploy them to the Web–all with a pre-coded, tested and tuned thin client solution that requires no changes to the host application.

Call us to learn more about how SEAGULL's WinJa™ and J Walk™ products can help get your company to e-street in no time flat.

SEAGULL™

www.seagullsw.com/ebusiness.html
ebusiness@seagullsw.com
770-521-1445, Ext. 0
© 1999 SEAGULL

Small, Midsize European Firms Slow to Deal With Year 2000

BY ELIZABETH DE BONY

The European Commission warned in a report last week that key sectors in the European Union aren't moving quickly enough to ensure that their computer systems are year 2000-compatible, mostly because small and midsize companies haven't taken the challenge seriously.

The six-page report called on all 15 countries in the EU to establish contingency plans to avoid the disruption of vital services — notably electricity, which the report identified as "a backbone of all essential services."

The report also underlined the need for more cross-border testing of systems, though it recognized the difficulty of closing down electrical grids to test compatibility.

"Every [industry] sector consistently reports that particularly smaller organizations continue to lag significantly behind large companies," the report said. In addition, the report warned of the possibility of clogged telecommunications networks as people call friends and family at midnight on Jan. 1. It urged EU countries "to ensure a continuing priority to emergency and other essential services."

The report said carriers outside the EU may not be well-prepared and that disruption of international telephone and fax networks may occur. Although the report didn't name the regions at highest risk, EU officials acknowledged that Africa and South America are of prime concern.

Stockpiling Expected

For the first time, the European Commission also called on food and pharmaceutical companies to prepare for possible "unusual surges in demand toward the end of 1999." Officials expect consumers to stockpile essential products in November and December out of fear that they won't be available in January.

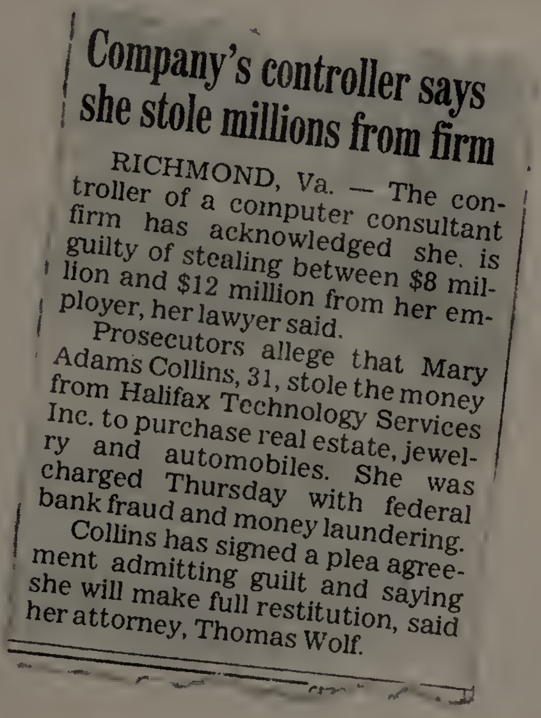
A European Commission official denied reports that suggested Southern European countries — including Greece, Spain and Portugal — are the furthest behind in checking their computer systems.

"The delays are sectoral, not national. But since small- and medium-sized companies are more prevalent in these economies than in Northern Europe, it may appear that these southern EU members have further to go in meeting the millennium challenge," said the official, who asked not to be identified.

The report also pointed to continuing concerns about the Y2K compliance of systems in nuclear power plants in Central and Eastern Europe. ◗

De Bony writes for the IDG News Service in Brussels.

We don't make this stuff up.



Company's controller says she stole millions from firm

RICHMOND, Va. — The controller of a computer consultant firm has acknowledged she is guilty of stealing between $8 million and $12 million from her employer, her lawyer said.

Prosecutors allege that Mary Adams Collins, 31, stole the money from Halifax Technology Services Inc. to purchase real estate, jewelry and automobiles. She was charged Thursday with federal bank fraud and money laundering.

Collins has signed a plea agreement admitting guilt and saying she will make full restitution, said her attorney, Thomas Wolf.

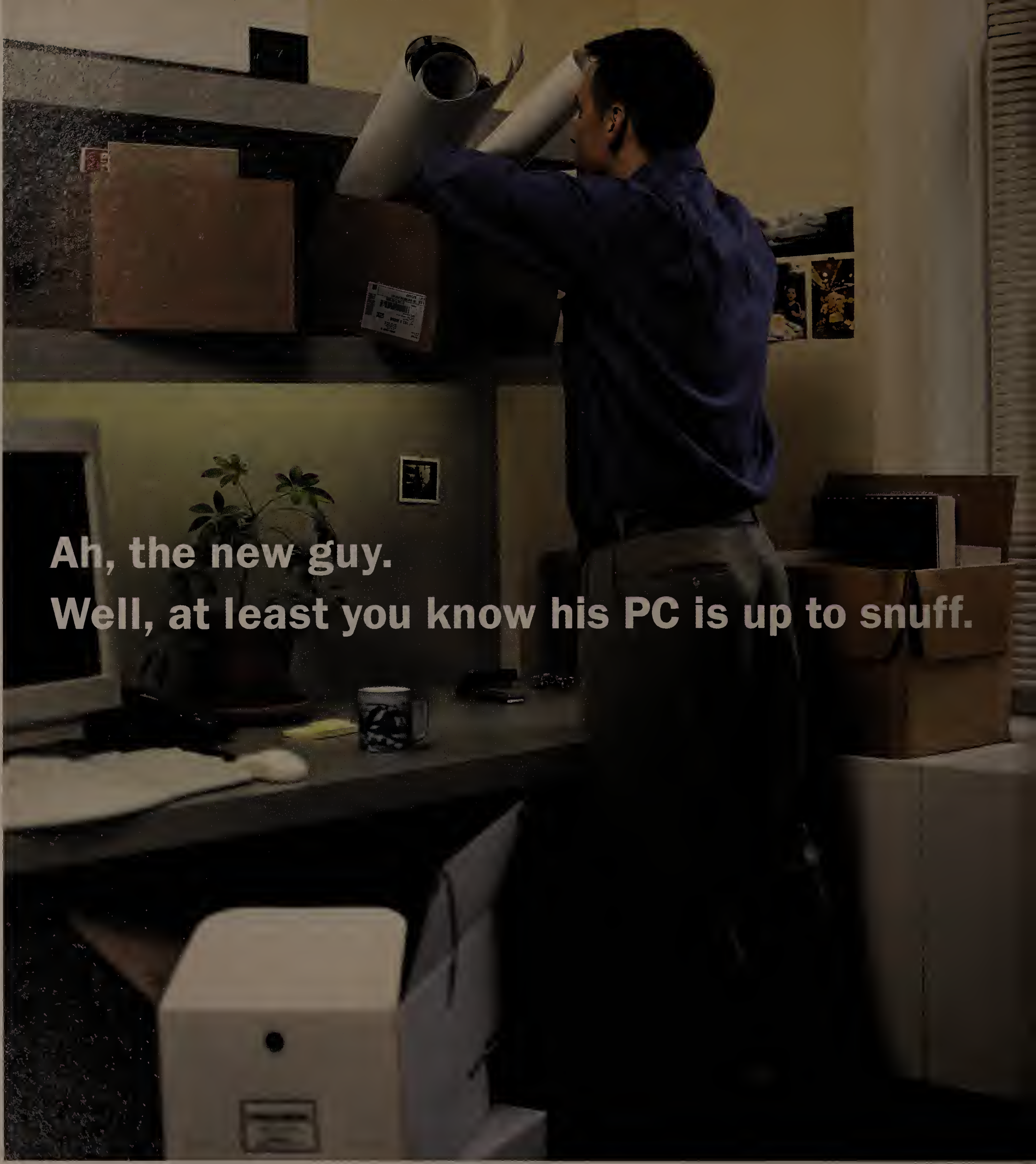
CCB sure

Insurance for IT Companies.

Professional Liability
General Liability
Computers and Other Property
Crime Coverage
Sexual Harassment

Call the IT Insurance experts today!

(800) 336-5659
www.ccbsure.com


Ah, the new guy.
Well, at least you know his PC is up to snuff.

©1999 Microsoft Corporation. All rights reserved. Microsoft, Windows, the Windows logo, Windows NT and Where do you want to go today? are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

When you specify **WINDOWS® 2000 *READY* PCs**, you know you're getting the right business systems for today and tomorrow. They're right for today because they come loaded with Microsoft® Windows NT® Workstation 4.0, so you get the performance your users require and the manageability and ease of support you need. They're ready for tomorrow because they offer the easiest upgrade to Windows 2000 Professional, the next version of Microsoft's desktop business operating system. And, because it's Windows, your users already know how to use it—even that new guy. To find out where to purchase Windows 2000 Ready PCs, just visit www.microsoft.com/windows2000/ready/pc.

WINDOWS® 2000 *READY* PCs

***READY* WITH WINDOWS NT® WORKSTATION 4.0**
***READY* WITH 300 MHz OR MORE**
***READY* WITH 64 MB OF RAM OR MORE**

Microsoft®
Where do you want to go today?®

BRIEFS

Cisco: FTC Ends Probe Of Partnership Talks

The Federal Trade Commission has closed its inquiry into partnership talks between Cisco Systems Inc., Lucent Technologies Inc. and Nortel Networks, Cisco said. The FTC last September asked for information about Cisco's separate talks with Nortel and Lucent executives regarding "potential business opportunities" in emerging communications markets.

The talks ended before the inquiry began, Cisco said.

Regulators Examine SAP Stock Trades

German regulators are looking into allegations of insider trading at SAP AG after alleged irregularities in the trading of SAP stock and stock options just prior to the German vendor's Jan. 5 warning that its profits would be lower than expected.

SAP said it is cooperating with investigators.

Short Takes

AMERICA ONLINE INC. last week acquired two online music companies – Internet broadcaster **SPINNER NETWORKS INC.** in San Francisco and MP3 audio-player maker **NULLSOFT INC.** in Sedona, Ariz. – for approximately $400 million in stock. . . . **PEOPLESOFT INC.** in Pleasanton, Calif., said it is handing off sales of an enterprise resource planning application package for small and midsize users to four regional resellers. . . . Publishing software maker **ADOBE SYSTEMS INC.** in San Jose said it is cutting 250 jobs, or 9% of its workforce, and will shutter its European headquarters in a restructuring move intended to focus the company more on e-commerce. . . . **YAHOO INC.** in Santa Clara, Calif., said it will buy **ONLINE ANYWHERE**, a Palo Alto, Calif., developer of technology that delivers Web content to non-PC devices, for approximately $80 million in stock. . . . Employee self-service software vendor **CONCUR TECHNOLOGIES INC.** in Redmond, Wash., has acquired Web-based human resources applications maker **SEEKER SOFTWARE INC.** in Oakland, Calif., for $131.8 million in stock.

Intel Bolsters Voice/Data Lineup With Dialogic Buy

$780M purchase the latest in network know-how shopping spree

BY STACY COLLETT

INTEL CORP. added another piece to its network services puzzle last week when it announced plans to purchase Dialogic Corp. for $780 million.

Parsippany, N.J.-based Dialogic makes computer telephony software, network interfaces and media processing boards that run on Intel-based servers.

Officials said the acquisition will help boost Intel's standard-high-volume (SHV) server business in the networking and telecommunications market segments.

The purchase is the latest in a six-month spending spree by Intel — worth about $3.2 billion — that included stakes in voice and data networking companies and Web-hosting services.

The chip giant recently outlined plans to enter the lucrative business of hosting, managing, storing and delivering applications and Web content [CW, May 24]. Intel officials also made no secret of their interest in voice and data ventures.

But Intel's rapid-fire purchases of myriad technologies have some analysts perplexed over its ultimate goal and concerned whether it can successfully integrate so many companies (see chart).

"With this mosaic [of acquisitions] it's hard to judge whether it's a good piece of art or not at this point," said Charlie Glavin, an analyst at Credit Suisse First Boston in San Francisco. "We're waiting to see where the other pieces fit and, ultimately, whether Intel can integrate all those pieces together in a timely fashion without losing a lot of engineers."

"It strikes me as globbing on to anything that's possibly interesting and significant in order not to miss anything," said Joe Osha, an analyst at Merrill Lynch Global Securities in New York. But Intel's rationale more likely is that "if they do enough in the enterprise hardware and software side, they'll build a set of core competencies that will help them penetrate the enterprise with what they really need to sell: microprocessors," he added.

Although Intel won't disclose just how much it plans to spend on acquisitions, observers estimated the company has $6 billion to $9 billion in reserve cash that it will probably use to purchase more networking companies and input/output expertise in the next year.

What does that mean to information technology departments? "Intel is going to try to push data and voice networks forward faster," predicted Chris Chaney, an analyst at A. G. Edwards & Sons Inc. in St. Louis. Merging data and voice networks will still be "a very complex task. But the standards, dominated by Intel, will make it easier for IS departments to adopt [the technology]," he said. ▶

Intel's Acquisitive Nature

JUNE 1999 Acquires Dialogic Corp. for $780 million. Dialogic makes computer telephony software, network interfaces and media processing boards.

MAY 1999 Buys $200 million stake in Williams Communications Inc., which provides Web-hosting services.

APRIL 1999 Partners with Excite Inc. to develop personalized e-commerce services.

MARCH 1999 Acquires Level One Communications Corp. for $2.2 billion. Level One provides silicon connectivity products for high-speed telecommunications and networking applications.

In Wireless World, MCI Reaches for a Pager

SkyTel merger leaves phone service lagging

BY BOB WALLACE

Although MCI WorldCom Inc.'s planned $1.8 billion merger with paging power SkyTel Corp. would cement its niche in the wireless world, the carrier still lacks what corporate users really want — wireless phone service.

And industry experts wonder if MCI can catch up with well-established rivals AT&T Corp. , Sprint Corp. and others that already offer wireless phone service as a stand-alone product or bundled with other services.

"Buying SkyTel is a good move, as it gets MCI further into wireless, but they're still the only major telecom provider without wireless phone service, and that's where user demand is," said analyst Callie Pottorf at International Data Corp. in Framingham, Mass.

Rivals AT&T and Sprint have sold their paging businesses and focused instead on creating and building wireless phone service units that were among the top four in market share last year (see chart).

Meanwhile, MCI's moves dating back several years have failed to establish it in the wireless industry.

MCI didn't bid on personal communications services licenses at a Federal Communications Commission auction in 1997. Instead, the carrier signed a marketing agreement with a wireless company, NextWave, that went bankrupt.

Later, MCI dropped out of the bidding for industry powerhouse AirTouch Communications Inc. and stopped acquisition talks with NexTel Communications Inc. earlier this spring because the asking price was too high.

MCI doesn't believe that the lack of a wireless telephone network like AT&T's or Sprint's is hurting the carrier. "We think wireless is important, but we don't think [not having it] is limiting our growth," said spokeswoman Barbara Gibson.

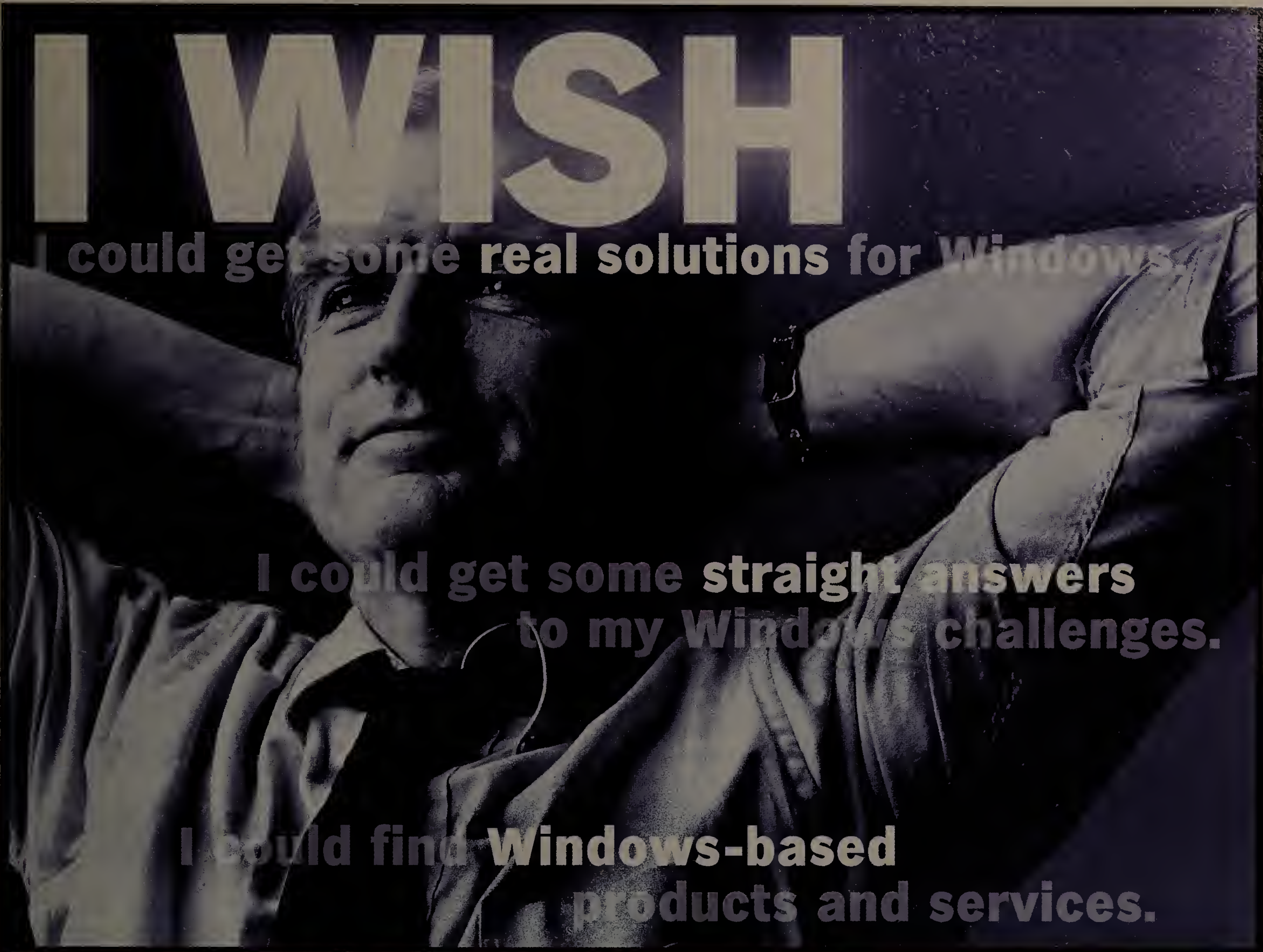
Still, analysts said they don't see the SkyTel acquisition as a big boon for MCI. Jeffrey Kagan, president of Kagan Telecom Associates in Marietta, Ga., said, "The move makes sense, because MCI has long resold SkyTel services and used them internally, but is not earthshaking." ▶

Wireless Phone Services Leaders

[illegible]

SBC Wireless	13.2%
AirTouch	12%
AT&T Wireless	11.3%
Sprint PCS	4%
Others	59.5%
MCI	0%

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.



I WISH
I could get some real solutions for Windows.
I could get some straight answers to my Windows challenges.
I could find Windows-based products and services.

Windows® 2000 Conference & Expo

Real World Answers for your Enterprise

Conference: February 14–16, 2000 • Expo: February 15–16, 2000 • Moscone Convention Center, San Francisco, CA

Finally! A conference and expo that gives you exactly what every corporate Windows user has been looking for — real solutions, straight answers and the widest selection of Windows-based products and services available anywhere. The Windows 2000 Conference & Expo is a forum for all that is Windows, without all the clutter of other issues, products, platforms and technologies. In fact, no other trade show brings together the entire Windows marketplace on such a high scale. Our conference keynotes will speak to your pressing real-world Windows challenges. And our show floor will be home solely to Windows-based products and solutions.

This is your show! **For more information on attending or exhibiting, go online:**

www.windows2000expo.com

or call: **1.800.560.7612**

W2000

Real World Answers for your Enterprise

owned and managed by:

WANTUG
an event partner

IDG
WORLD EXPO

© 1999 IDG World Expo. All rights reserved. All other trademarks contained herein are the property of their respective owners.

CW

PAUL GILLIN

Online opportunism

THEY'RE PROBABLY still sponging the blood off the walls at Merrill Lynch, which last week said that it would change a generations-old business model and embrace discount trading over the Internet. The company's action points out how the Internet can change some of our basic assumptions about what business we're in.

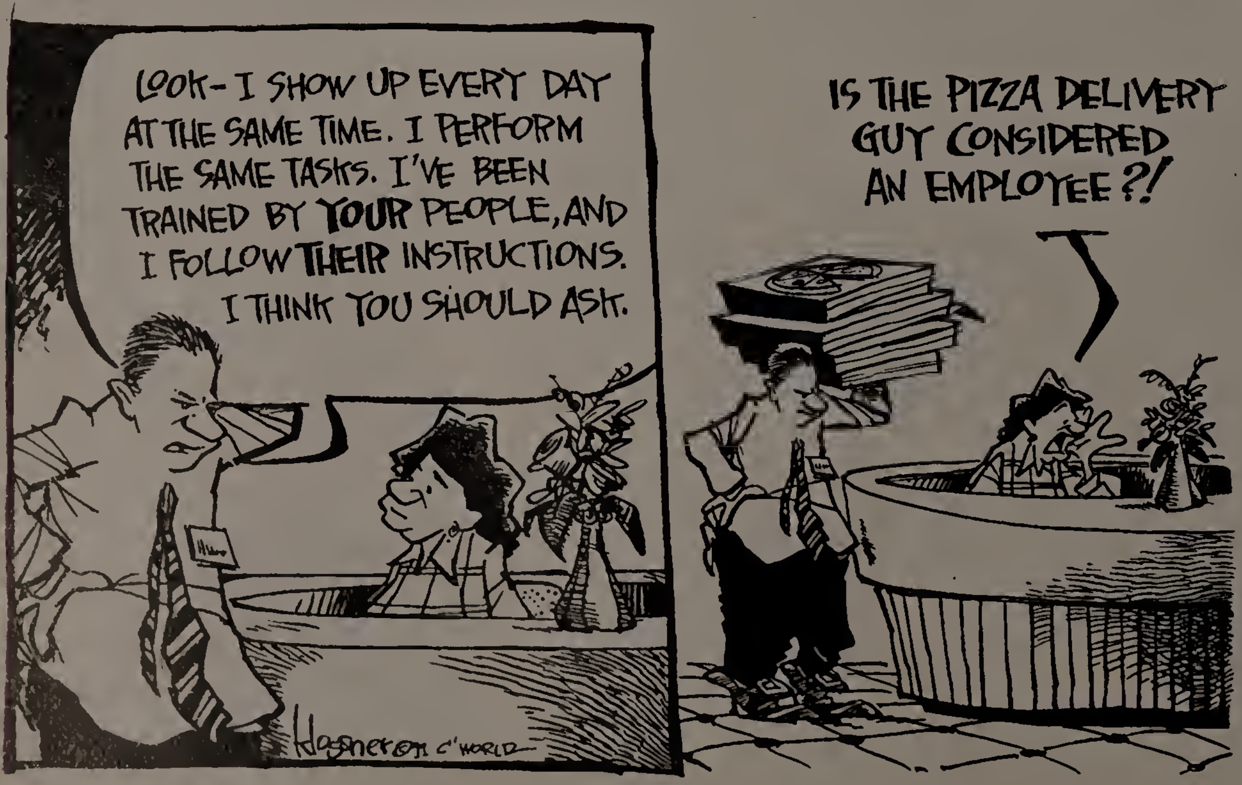
PAUL GILLIN is editor in chief of *Computerworld*. You can contact him at **paul_gillin@computerworld.com.**

To show how tough this call was for Merrill Lynch, consider this quote from an April 1997 issue of *Computerworld* by Randal Langdon, now a Merrill Lynch first vice president. The "wisdom" that Merrill financial advisers bring to clients "is fundamentally different than Internet brokers, who are interested in opportunistic trading," he said.

But opportunism is what the Internet is all about. The Net enables focused new competitors to challenge, at relatively low cost, broad-based market leaders. In loudly dismissing online trading for three years, Merrill Lynch made the mistake of thinking that the trade was intrinsically tied to the buying process. Discount brokers have proved that it's not. In fact, the success of online advisory services like Thestreet.com and The Motley Fool shows that, in the customer's mind, making the decision to buy and actually buying are two very different things.

This is the disaggregation thing everyone's talking about — the separation of masses into their component parts. The Internet promotes disaggregation. Some PC distributors have learned that they can sell machines at a loss but make up the difference by selling ads against information services on their Web sites. Internet auctions demonstrate that some people will pay a premium simply to have a chance to set their own price.

Disaggregation can work to your advantage. For example, Merrill Lynch could decide at some point that it's not in the trading business, it's in the advisory services business. Outsource the trading to a discount broker, cut all that cost and refocus on high value investment services. What a change for a company that thought it made money on the transaction. What an opportunity to rethink what your business is all about. ◗

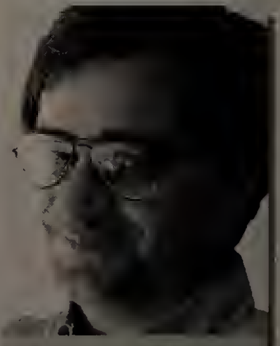

LOOK- I SHOW UP EVERY DAY AT THE SAME TIME. I PERFORM THE SAME TASKS. I'VE BEEN TRAINED BY YOUR PEOPLE, AND I FOLLOW THEIR INSTRUCTIONS. I THINK YOU SHOULD ASK.
IS THE PIZZA DELIVERY GUY CONSIDERED AN EMPLOYEE ?!
C'WORLD

MICHAEL CUSUMANO

Learning from E-Commerce Award winners

ON MAY 11, the MIT Sloan School of Management bestowed its first annual E-Commerce Awards. About 200 companies competed in six categories. I agreed to be a judge in the competition because I thought I might learn something — and I did.

I came away convinced that e-commerce has enormous power to change and enhance existing businesses. It can create new businesses, reduce prices and offer totally new products and services. The basic idea of e-commerce is to do things in virtual space that traditional companies can't do or do efficiently. For example, online companies can eliminate intermediaries and overhead costs such as physical stores. But even more interesting are those companies that create new businesses that couldn't exist without the Web.



MICHAEL CUSUMANO, co-author of *Competing on Internet Time: Lessons from Netscape and its Battle with Microsoft*, is a professor at the MIT Sloan School of Management. Contact him at **cusumano@mit.edu.**

Egghead.com and Dell Computer are two examples of firms using the Web to rethink marketing and distribution. Egghead.com won the Web Transformation Award for progress in moving from a brick-and-mortar business to an online company. Last year, this firm closed all its stores and became a pure online retailer of PC software and hardware accessories. Unfortunately, many retailers can sell packaged software, so that transformation may not work so well as a business model; the reshuffled company has yet to turn a profit.

Dell won the Internationalist Award for its success in customizing online Web sites for 44 countries and 21 languages. Impressive, but not creative.

More innovative companies include MP3.com Inc., which won the Re-inventor Award for transforming an industry through e-commerce. The MP3 Web site allows artists to distribute samples of their music for free by using the compressed MP3 format and lets customers buy the full CDs directly from MP3.com. MP3.com thus bypasses traditional music publishers and allows artists to attract fans.

Net Perceptions Inc. won the Technology Innovator Award. Its technology allows businesses to screen customer preferences and provide personalized "storefronts" — menus of targeted product offerings and recommendations, based on real-time data from the user's transactions and from customers with similar preferences.

Akamai Technologies Inc. won the Rookie of the Year Award as the most promising new e-commerce company. It offers high-speed distribution services to Net content providers through a global network of servers. Patented optimization algorithms automatically route Web users to the nearest Akamai server, which acts as a mirror site for the content providers. Forrester Research estimates that the Web-hosting market will explode from $900 million in 1998 to $10 billion by 2002; Akamai is right in the middle of that boom.

The award for social responsibility went to Impact Online, whose Volunteermatch.com Web site has connected nearly 30,000 volunteers with more than 4,000 nonprofit organizations.

It's not easy to tell in advance which new e-commerce businesses will work. But every organization is likely to explore e-commerce modes of sales and marketing, whether they're appropriate or not. As a result, companies like Net Perceptions or Akamai, which provide infrastructure technologies or tools to make e-commerce happen, seem very well-positioned. At the awards ceremony, someone mentioned that in the days of the California Gold Rush, the individuals that made most of the money weren't the prospectors themselves, but the people who sold picks and shovels. ◗

DAVID MOSCHELLA

Y2K legislation gets the Beltway treatment

WHOSE SIDE are you on? Do you support the Republicans, who say that legislation limiting liability lawsuits is the best way for society to handle the year 2000 problem quickly and efficiently? Or do you agree with the Democrats, who ask why IT vendors should receive special immunity, especially when they've had so much time to prepare their remedies?

DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at **dmoschella@earthlink.net.**

Perhaps, like me, you're mostly put off by the whole debate. The political process so far has been another predictable exercise in overtly partisan, semicorrupt, special-interest pleading. Republicans are in lock-step support of powerful business interests, while the Democrats are taking care of their favorite sugar daddy, the rapacious Association of Trial Lawyers, many of whose members got rich by suing vendors of tobacco, asbestos, silicone implants and other social pariahs.

If you haven't been following the story, the proposed congressional legislation would: 1) Give companies 90 days to fix a Y2K problem before a suit could proceed; 2) limit punitive and noneconomic damages to $250,000, or three times economic damages, whichever is greater; 3) impose "proportional" liability; and 4) limit attorney's fees to $1,000 per hour. The House passed its version, 236-190, but the Senate has been unable to bring its bill up for a vote.

Despite his often pro-high-tech rhetoric, President Clinton has clearly sided with his trial lawyer brethren, announcing that he would veto the House bill. Meanwhile, our even-more IT-centric vice president, rather than offend either the lawyers or his Gore-tech constituency, has suddenly gone silent, once again declining to take a stand on an important industry issue. He must be too busy reinventing the Internet.

The high-tech vendor community hasn't done much to make its case. IT industry executives seem to believe that because they're the good guys who saved America's economy, they deserve a special exemption — no matter how great the disaster. Many also refuse to accept real responsibility, falsely suggesting that because most Y2K problems go back to the 1960s, no one today is really to blame. Scaremongering is also a key tactic, with the widespread circulation of the largely groundless estimate that, left unchecked, lawsuits could reach $1 trillion. Only war, spies and school shootings have kept the whole debacle off the front page.

Congress has, of course, already passed two minor pieces of pro-industry Y2K legislation. Last year, it made sure that companies could proactively discuss their Y2K situations without fear of antitrust or liability implications. And in April, Clinton signed a mundane-but-harmless bill that allowed the Small Business Administration to make loans to cover small businesses' Y2K costs.

But on the big issue of legal liability, the IT industry isn't getting its way. Right now, that's fair enough. We have no idea if there will be very few lawsuits or so many that federal intervention might be needed. All we do know is that the IT industry has entered that unavoidable — but still depressing — realm where special funds are spent in hope of special favors, thus far without success. ◗

READERS' LETTERS

Less is more . . . of a problem

A NOTABLE quote, source unknown: "Trust the computer industry to shorten 'year 2000' to 'Y2K.'

It was this kind of thinking that caused the problem in the first place."

Alan Falk
Installed Base Programs
EAO/ESSG North Americas
Marketing Center
Cupertino, Calif.

Drucker misses mark on impact of IT

WITH all due respect to Peter F. Drucker, he is a mile wide of the mark. The headline on Gary H. Anthes' interview with Prof. Drucker may be apt ["Drucker: IT Hasn't Done Job," April 26], but you'd have to have blinders on not to see the true impact of computers on today's society.

There are thousands of examples, but perhaps the ones that most damn Drucker's damnation of information technology can be found in an 11-year-old book, *The Rise of The Expert Company*, written by Feigenbaum, McCorduck and Nii and published by Times Books.

John Kjellman
Henniker, N.H.
johnk@victorex.com

Online travel research not structured

BEING deeply involved in the online travel reservations industry, I was initially heartened to see "Reservations Online" by Cynthia Morgan in your April 12 edition.

However, I must challenge the methodology of these evaluations.

I did not get a sense from Ms. Morgan's survey that she used a structured approach, nor was her sampling extensive.

A trained expert travel agent will clearly beat a consumer every time, as they are aware of the right queries to the host to get the best answer for the consumer.

Finally, the survey did not take into account the time it can take to reach a live agent, the long talk times, agent bias due to commission overrides and the inconsistency of the agent's ability, experience and enthusiasm to do the right thing for the customer.

Declan Boland
Global marketing manager
IBM
Waltham, Mass.
www.ibm.com/solutions/travel

Hacked up

IN JOSEPH Maglitta's column "Cyberterrorism is a Real Threat" [CW, April 19], he provides recommendations to reduce the threat. Unfortunately, several of his recommendations reflect the naïveté of most journalists, and the general public, on these matters.

Perhaps his most troubling recommendation is that people should hire teen hackers. I would ask, "Why?" The truth is that [hackers] demonstrate few skills that cannot be picked up within a few hours of Web surfing by a computer professional. Living on the edge really translates to: "They are willing to commit actions that are considered criminal."

Advocating hiring hackers is an insult to real professionals. It is sad when the advocation comes from a respected industry publication that is expected to know the intricacies of the profession.

Ira Winkler
Severna Park, Md.
winkler@isag.com

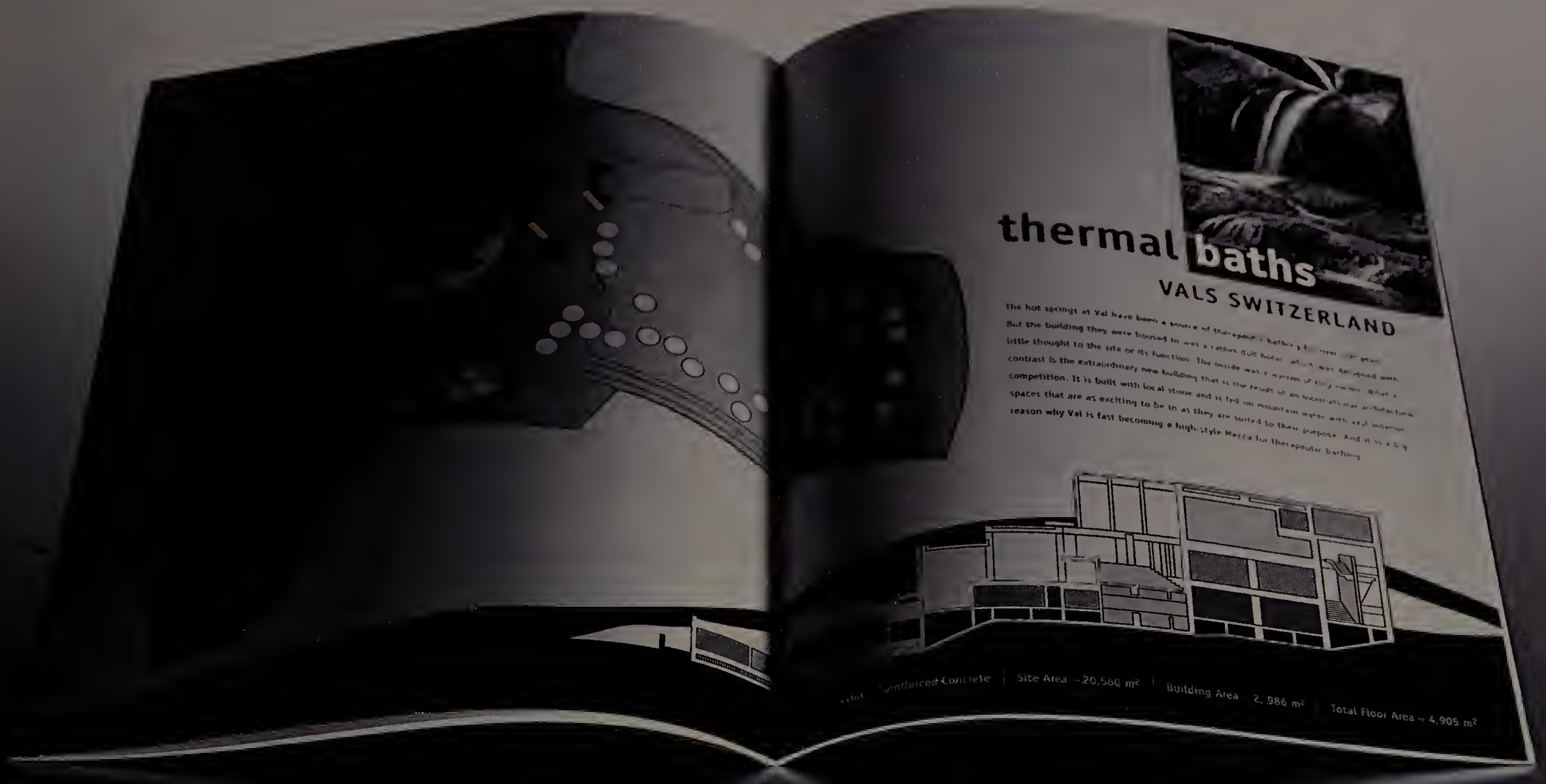
COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

Sort and staple just doesn't cut it in a right-from-your-desktop, 3-hole-punch, saddle-stitch kind of world.*

imageRUNNER™
600

IMAGEANYWARE™

Call 1-800-OK-CANON, or
visit us at www.usa.canon.com



Imagine creating 200-page, three-hole-punch documents right from your desktop. The Canon imageRUNNER 600 Digital Production System lets you do just that. With ingeniously easy-to-operate Canon document finishing software -- and the touch of a mouse -- the imageRUNNER 600 enables you to saddle-stitch booklets, side-staple reports, plus z-fold and index as you see fit. So look into the Canon imageRUNNER 600. Then, look out. **HERE'S THE FUTURE. LET'S GET TO WORK.™**

Z-Fold
Saddle Stitch

imageANYWARE™

Canon

is a service mark of Canon U.S.A., Inc.Here's the future. Let's get to work is. a trademark of Canon U.S.A., Inc. IMAGERUNNER is a trademark of Canon inc. *Saddle-stitch, z-fold, 3-hole punch available Summer 1999. © 1999 Canon U.S.A., Inc

JOHN GANTZ

Making a portal of your intranet

I'VE BEEN HAVING a debate with some of my fellow analysts. I say a company can have multiple intranets; they say as long as the wires are hooked together, there is really only *one* intranet.

We're both right.

As long as the network administrator has to deal with only one server, one LAN and one set of user registration headaches, technically there *is* only one intranet. But as long as departments create local Web sites on that intranet, each with its own look and feel, different search tools and a variety of user profiling mechanisms, then, for all practical purposes, you might as well say you have multiple intranets.

JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgantz@idcresearch.com.

Sooner or later, you're going to have to go through a rationalization and integration exercise. You'll have to impose order on the chaos. The problem will make getting e-mail systems to work together look like child's play.

For this you will need a strategy. Not all of us are as savvy as Microsoft, which has already created an internal network of intranets called MS:Web, with some common standards for authoring, look and feel, and management. My own company, for instance, is just now going through a twofold effort: We're developing a common taxonomy — essentially the outline of our content and keywords — to make searching across our Web sites more effective. We're also analyzing the best features of our several dozen Web sites around the world for setting corporate standards. Hey, at least we're on the right path.

The first and easiest thing you can do is develop a common look and feel for your multiple internal sites — some common logos, page layouts and so on. Let's call this a common user interface. Then establish linking to a central home page that becomes the embryo of your first real "portal." One of the first things you'll want to add to this portal, of course, is personalization features.

But enterprise portals will have to come in flavors — you can't optimize for everything a portal can potentially do. Some will be front ends to applications, like human resources and enterprise resource planning systems. Some will be front-end knowledge bases and collaborative systems, while others will primarily be publishing systems. Each portal becomes an archipelago of what were once separate Web sites and application islands.

The final linking will take more courage and more money. It will establish a single search mechanism, a single or nested taxonomy, a structured authoring system and metadata and context management across all those internal portals. At this point we aren't just fooling with Web sites anymore — we are hiring people, buying software and rewriting code in our legacy applications and databases to make all this work together. Ultimately we may even be redesigning those databases, transaction and decision-support systems that feed our commonly administered network of portals in order to run our businesses better. We'll "dot.com" the enterprise, making information access truly seamless.

This isn't something that will move in Internet time, but as soon as you have one or more intranets, no matter how you define them, you need to start designing for the next level of integration. You'll need to start on the migration path from being a company with lots of internal Web-enabled applications to being a Web-enabled company. You can't do that without a strategy for creating a coherent whole out of the sum of all those Web-enabled parts. ◗

PAUL CLERMONT

IT strategy: Hold the methodology

REMEMBER RONALD REAGAN'S famous words, "There he goes again"? Three times in the past year, I was thinking "There *they* go again" as I looked over various consultants' methodologies for IT strategic planning.

PAUL CLERMONT is an independent IT management consultant in New York. Contact him at paulclermont@alum.mit.edu.

If we look beneath the snappy graphics of those methodologies (two were computer-assisted), we can see an approach right out of the 1970s. First, conduct facilitated workshops with business and IT people to identify opportunities. Then quantify the value of each opportunity along dimensions like cost/benefit, risk and strategic impact. Next, assign a weight to those dimensions, and out comes a priority list. Fit the priorities into a multiyear budget, and the strategy is now a plan.

On the surface, this seems totally reasonable. How better to set priorities than by business-oriented measures? How better to identify opportunities than by asking the businesspeople? But if developing IT strategies and plans were this easy in reality, everyone would do it. Why hasn't that happened?

The devil in the details is unmasked when we examine two assumptions that underlie this approach: first, that IT initiatives are substantially independent of one another; and second, that IT is budgeted and provided by a centralized, homogeneous DP shop that has only a limited capacity to execute. In the 1970s, those assumptions were sufficiently valid for such an approach to work. Today, IT strategy is a lot more complex. For example:

- IT can enable and shape business strategy rather than just respond to it, so we need active participation and ownership by business executives. Orchestrating that requires content knowledge and seniority, not just facilitation.
- Even nonstrategic opportunities are usually cross-functional and re-engineering-oriented, but it's politically difficult for facilitated workshops to identify improvements of more than limited scope.
- Cross-functional initiatives, by definition, interact with one another. Regardless of calculated priorities, we may not be able to do A until B is done, or we may not be able to get the benefits of A until C is done.
- Today's initiatives vary greatly, ranging from an e-commerce launch to re-engineering a process, and overhauling an application to deploying a new desktop suite. Implementing all of this requires the involvement of many kinds of people and funding from different budgets. Comparing them all on a single yardstick is arithmetically easy but pointless because the limiting factor is doability, not just money.
- Executives who understand IT's strategic value won't be satisfied with an approach to strategy that primarily identifies the tactical and incremental. CIOs shouldn't be either.

If old wine in new bottles isn't good enough, how should CIOs plan instead? No, this isn't a promotion for a "new, improved" methodology. On the contrary: IT strategy today needs less methodology. Instead, it needs more content knowledge and creative thinking, fewer scripted interviews and workshops and more meaty senior-level discussions.

We do need frameworks and principles, but specific methodologies — meetings, surveys, research, analyses, talks — and their structure and formality must be tailored to the business situation and culture — or even invented on the spot. Only well-seasoned consultants have the necessary sensitivity, seniority, flexibility and creativity to make that work. If a consulting firm emphasizes proprietary methodology and computer-based tools more than its experienced and insightful people, beware!

Simplistic methodologies for IT strategy and planning offer the same appeal as junk food. They look good, they're easy, and they seem to fill us up, but also like junk food, they leave us undernourished and hungry again too soon. The health effects of a junk food diet may take years to appear, but the career effects can materialize quickly for a CIO who talks about IT's strategic importance but addresses it only with an obsolete, tactically oriented approach. ◗

©1999 Cisco Systems. Corporate logo, "Empowering the Internet Generation" and the Cisco Powered Network logo are registered trademarks or trademarks of Cisco Systems, Inc. All rights reserved.

We know a service provider
that delivers global financial news
to 16,000 places every minute.
In the New World,
information never sleeps.

The sun never sets on the global marketplace. Especially for a major business news wire that reports the latest breaking financial news to business leaders in 24 countries. So it's no accident that it relies on a Cisco Powered Network™ service provider.

Welcome to the New World – where Cisco Powered Network service providers are changing the way people share ideas and information in extraordinary ways. Impressive, but not surprising when you consider that virtually all Internet traffic in the world travels across the systems of one company. Cisco Systems. We can help you achieve the same exceptional results for your business. Look for the Cisco Powered Network mark or visit us at www.cisco.com/cpn.

We'll match you with a Cisco Powered Network service provider who can reliably extend your network over a Cisco-based infrastructure. And beyond.

Cisco Powered Network™

Cisco Systems
Empowering the Internet Generation™

UNSUNG HEROES

The 1999 *Computerworld* Smithsonian Awards — which honor IT projects that benefit society — feature high-profile firms like Federal Express, Schwab and Cisco. But they also spotlight far lesser-known names such as Calton, Hitchcock and Mandel

Mentor Helps Students Bring Harlem to Life on the Web

BY KATHLEEN MELYMUKA

When Richard Calton left a 10-year teaching career to work as a computer coordinator at the Harlem public school district in New York, he found he missed the kids. So he got hold of a laptop, a digital camera, a server and a handful of former students — and used his Web skills to bring HarlemLive to life.

HarlemLive (*www.harlemlive.org*) is a mosaic of life in that African-American community produced by Harlem high school students and delivered as a Web magazine. Calton says it was his kind of project from the start. "There were no committees, no forms, no permissions [needed], no bureaucracy," he recalls.

But there was also no money and no place to work. So Calton persuaded the Institute for Learning Technologies (ILT) at Columbia University in New York to host the site on its server and provide some unused office space, phone lines and computers. Last November, the project moved to a community technology center in Harlem called Playing 2 Win.

The staff is all-volunteer, including Calton, who by his own example has induced two dozen adult advisers from the community to join in. "Everyone sees he is volunteering his time, so they say, 'I guess I can do that too,' " says Mara Rose, director of Playing 2 Win. "He's very devoted and true, and that spreads to everyone who gets involved."

At age 3, HarlemLive still has the vibrancy of a new idea. "So many sites have a brief period of creative fervor and then stagnate," says Robbie McClintock, co-director at the ILT. "But HarlemLive keeps changing."

A recent issue included a visit with U.S. Rep. Charles Rangel (D-N.Y.), a look at how three new businesses will affect the community, reporting on a protest over the imprisonment of a former Black Panther accused of murder and reaction to the Littleton, Colo., high school shootings. There also were book, theater and movie reviews; poetry; editorials; and lots of excellent photographs.

"It keeps growing, and we have more and more ideas, but we still haven't received funding, so it's hard to keep it together," says Calton, who pays expenses out of his own pocket. "There are times when it gets frustrating," he concedes. "People say, 'Oh, you're so fundable! You're so fundable!' So give us some money!"

A couple of the project's advisers are writing grant proposals, and Calton says he hopes that eventually he can hire some full-time staff, including himself.

The student staff has grown to about 75, half of whom are regulars like Kerly Suffren, a two-year veteran and a junior at Martin Luther King Jr. High School. Suffren, a poet, reporter and spokesman for the project, says HarlemLive makes learning fun. "My communications skills went up dramatically," he says. "I've applied what I learn to my schoolwork, and my grades have gone up.

"I've also learned to deal with people," Suffren adds. "As a reporter, sometimes you talk to people and you know right away you don't like them, but you have to deal with these things."

He credits Calton with much of what he's learned. "He's a very good teacher," Suffren says. "He's very giving and willing to listen, and he cares about us."

"It's an excellent example of a fully authentic education," McClintock says. "They learn because they want to make an excellent site that tells the world what's going on in Harlem. They feel they're doing their own community a significant service. It's a wonderful framework for education."

Observers call Calton the glue that holds the staff together. "He loves working with the kids," Rose says. "He comes right from work and is here till 10, 11 or 12 every night. And the kids know it."

Clearly, Calton is teaching more than academics. "The biggest thing is not necessarily the computer skills, though those are a big plus for getting into college and getting better jobs," Calton says. "And it's not just the writing skills, though that's good to have as well. It's the exposure they get. It's going into situations and meeting people — particularly people of color — they would have no way of doing otherwise and communicating and realizing there are opportunities open to them as well."

"He's very inspirational," Suffren says. "Sometimes I question how he does it because he has a real job, then he comes in and deals with us kids. We're fortunate to have him on our side." ◗

HARLEMLIVE PROJECT MEMBERS include: front row, Shem Rajoon; second row (from left), Rahsaan Harris, Richard Calton and Obatunji McKnight; third row, Basil Washington and Devan Hankerson; and back row, Khalid Muhammad, Jerlena Rhodes, Deniese Harris, Glenna Ross and Tameeka Mitchem

BRIAN SMALE

COMPUTERWORLD SMITHSONIAN AWARDS FINALISTS

Business and Related Services

- **DoubleClick Inc.**'s technology targets, tracks and delivers Internet advertising, which helps pay for all that free Web content.

FedEx
FedEx

- With Internet Ship, customers complete and print air-cargo bills and invoices at the **Federal Express Corp.** Web site, expediting package delivery and tracking.
- "Blindows" technology from **Frank Audiodata** allows blind people to use Microsoft Corp. Windows programs through a combination of speech synthesis, braille, tones and special feedback hardware that signals the key elements on the screen.
- **Kmart Corp.** offers in-store PCs that let shoppers order everything from money orders to major appliances.
- The semiconductor unit at **Motorola Inc.** has a global intranet that lets employees handle many human resources management chores themselves, which improves service and cuts costs.

Education and Academia

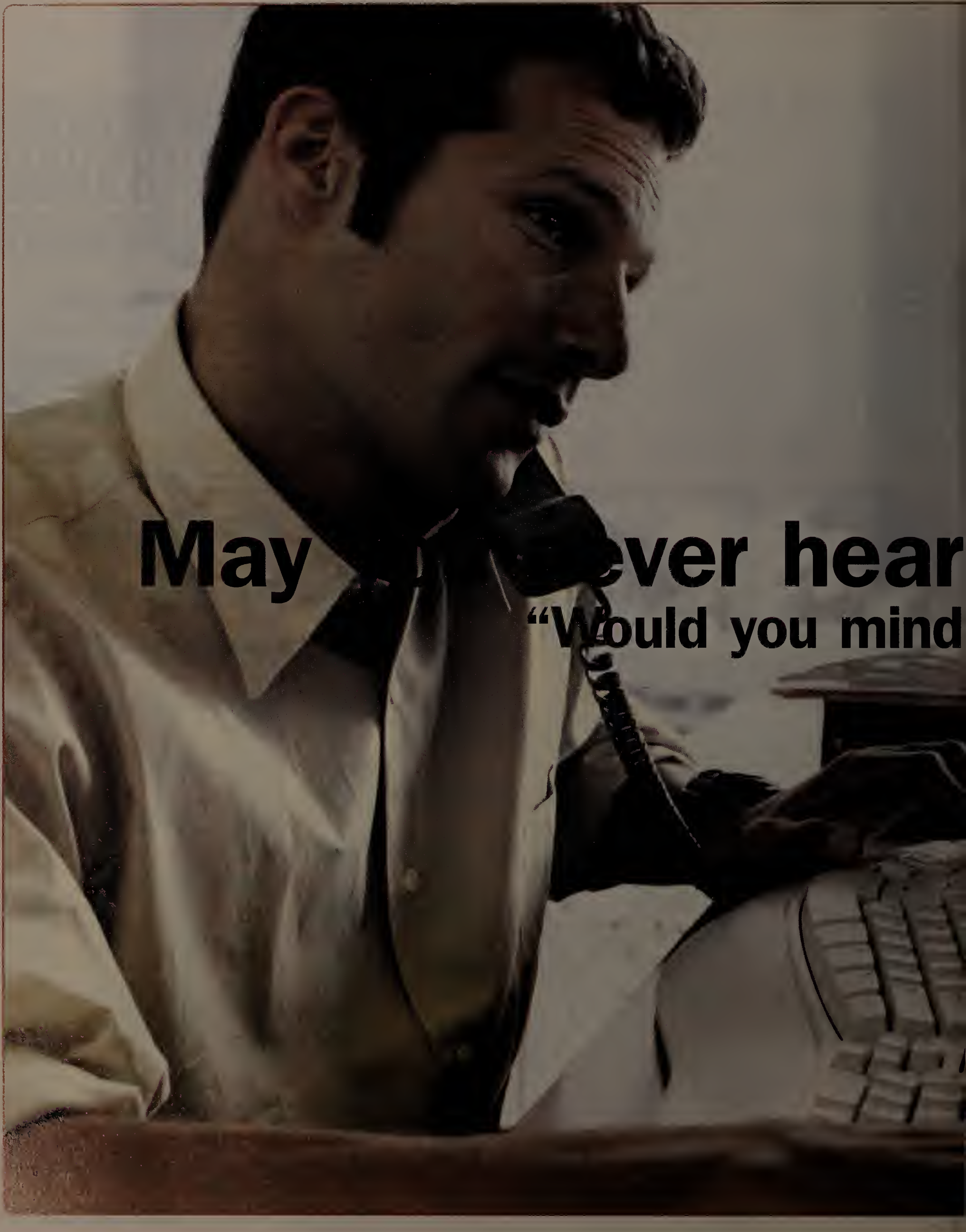
- **The Center for Applied Special Technology** developed "Bobby," a free tool for instantly analyzing whether a Web site can be accessed by those with disabilities (see story, page 44).
- **JSTOR**, a nonprofit group, offers a high-resolution archive of more than 100 scholarly journals accessible to students and scholars on the Internet.
- **MaMaMedia Inc.** offers Internet tools and activities to help children cultivate what it calls the three Xs: "eXploration, eXpression and eXchange of ideas."
- **EDSITEment** is a portal that links teachers and students to Web sites that meet rigorous standards of excellence and educational utility.
- The **University of Michigan's Virtual Microscope** offers hundreds of high-resolution, microscopic images on the Web, helping pathologists learn how to recognize diseases.

Environment, Energy And Agriculture

- **California** has formed the nation's first open-trading network for electricity, allowing the state's consumers to freely choose their power provider.
- **Chevron USA Production Co.** helps workers gather data for their jobs by offering an enterprise portal to more than 40 disparate corporate databases.

- A monitoring system at **Koch Industries Inc.** uses models and artificial intelligence to pinpoint possible pipeline leaks within seconds and prevent environmental hazards.
- The Advanced Weather Interactive Processing System at the **National Weather Service** improves forecasts of hurricanes and tornados.
- **North American Power Brokers Inc.** has an e-commerce system that matches buyers and suppliers for retail energy transactions, thereby lowering costs in a deregulated environment.

Continued on page 44


May
ever hear
“Would you mind

Microsoft
Microsoft SQL Server 7.0

Where do you want to go today?° **Microsoft**

this again:
creating some reports for me?"

By using Microsoft® Office 2000 with Microsoft SQL Server™ 7.0, many data access and manipulation chores that you now perform can be handled by your users instead. That's because with SQL Server 7.0, you can give users controlled access and let them use familiar tools in Microsoft Excel to create their own custom reports. And let them perform multidimensional analysis on volumes of data that normally would be too large to handle from the desktop. All of which means that they get the information they need to make faster and better decisions, while you remain free to focus on more critical tasks. For the power to help users help themselves, visit **www.microsoft.com/SQL/**

Now with SQL Server 7.0 and Office 2000 you can:

- Use built-in OLAP Services to let users do multidimensional analysis.
- Give users the ability to easily manipulate gigabytes of data using Excel.
- Link Office Web components to give users dynamic views from their browser.

© 1999 Microsoft Corporation. All rights reserved. Microsoft and *Where do you want to go today?* are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries

COMPUTERWORLD SMITHSONIAN AWARDS FINALISTS

Continued from page 41

Finance, Insurance and Real Estate

- **Banco Bradesco** in Brazil offers online banking screens that read information to visually handicapped customers.
- The **Charles Schwab & Co**. Web site lets investors get quotes, place trades, view account information, access market news and research and use financial planning tools.
- Prospective home buyers can apply for a mortgage, get pre-approved, shop for rates nationwide – and even check out neighborhoods and schools – at **HomeShark Inc.**'s Web site.
- **MasterCard International Inc.** co-developed the Secure Electronic Transaction protocol for safer e-commerce payments.
- The **Penn State University smart card** for students serves as a bank card, debit card and telephone calling card.

STUDENT
SUZANNE S

Government and Nonprofit Organizations

- A **Federal Deposit Insurance Corp.** (FDIC) system provides analysts with consistent and timely information on all FDIC-insured banks.
- The **Federal Reserve Board** has a system for sending bulletins to the banking industry about year 2000 issues.
- The Bastille, from **GTE Corp.**, is the only global data-sharing system specifically designed to help investigators catch more criminals.
- **Lucent Technologies Inc.** developed the fast, specialized database management system that helps automate police, fire and ambulance responses to 911 calls.
- **Ohio courts** are using a case management system that gives law firms, banks and title companies 24-hour access to court information and documents, reducing administrative costs.

Manufacturing

- At **Bath Iron Works** in Maine, precise electronic photographs help the shipyard assemble the 200-ton steel sections of a ship.
- **Cisco Systems Inc.**'s Web site supports annual sales of $5 billion and fills more than 70% of customer requests for technical support.
- **Ford Motor Co.**'s Internet ordering system allows car buyers to specify exactly what they want, arrange financing and receive their custom-manufactured vehicle in two weeks instead of two months.
- At **Georg Lingenbrink GmbH & Co.** in Germany, electronic imaging of books supports on-demand printing and delivery within 24 hours.
- **The Boeing Co.**'s data mining software extracts real-time cost, schedule and quality information for delivery to factory employees.

Media, Arts and Entertainment

- At the **Digital Clubhouse Network**, community members of all ages use multimedia PCs to tell the stories of their lives.
- **HarlemLive** is a Web magazine produced by Harlem, N.Y., teen-agers about their community (see story, page 40).
- **San Francisco's Exploratorium**, featuring thousands of Web pages and hundreds of audio and video clips, has been

Continued on page 46

SITTING IN ON A CAST MEETING are (from left) Web site developer David Grogan, CAST Universal Design Laboratory Director Chuck Hitchcock and consultant Michele Pierce. Facing Hitchcock are Michael Cooper, Bobby project manager, and David Clark, access technology specialist

JACK FOLEY

'Bobby' Beat: Enabling Web for All

BY STACY COLLETT

IMAGINE sitting in front of a PC linked to the Web — the world virtually at your fingertips — yet being unable to read the words, hear the audio or navigate through the pages.

That's the challenge facing millions of adults and children with sensory impairments, physical challenges and learning disabilities. Yet as webmasters race to develop cutting-edge sites with complicated graphics, revolving text and multimedia capabilities, access for people with certain disabilities is actually diminishing.

Today, only 10% of Web sites are considered fully accessible, according to the Center for Applied Special Technology (CAST), a nonprofit organization in Peabody, Mass., that is dedicated to universal designs for learning.

For Chuck Hitchcock, the issue couldn't be ignored. Hitchcock has been a crusader for the disabled since he began teaching children with special needs more than 20 years ago at a Townsend, Mass., elementary school. During his tenure, the microcomputer was introduced, and Hitchcock developed a hobbiest's enthusiasm for computer programming.

His passions ultimately led him to CAST, where he and fellow programmer Josh Krieger developed "Bobby," a free, Internet-based tool that helps Web developers make their pages accessible to the disabled.

"A few years ago, we realized the World Wide Web was clearly going to be an important resource for learners," Hitchcock says. "As we began to look at what we could do to make the Web more educational, we stumbled on to this problem of Web sites not being accessible — especially for the sensory challenged."

Bobby, named after the moniker for British police, is based on Web accessibility guidelines from the World Wide Web Consortium and the Trace Center at the University of Wisconsin.

Anyone who wants to test the accessibility of a site can simply log on to *www.cast.org/bobby/* and type in the address of the Web page to be analyzed. Bobby delivers a detailed accessibility report that specifies access barriers and explains how to eliminate them. A site that complies with the accessibility guidelines is allowed to display the "Bobby Approved!" icon.

For example, one student with a physical disability can't use a mouse. When she visited a research site for information for a master's thesis, she found that a site didn't allow her to navigate using keyboard shortcuts. Bobby identified the problem and suggested a remedy.

CAST co-founder David Rose recruited Hitchcock after hearing of his work running a Massachusetts program to help educators use technology in the classroom, as well as Hitchcock's two-year stint at Apple Computer Inc.

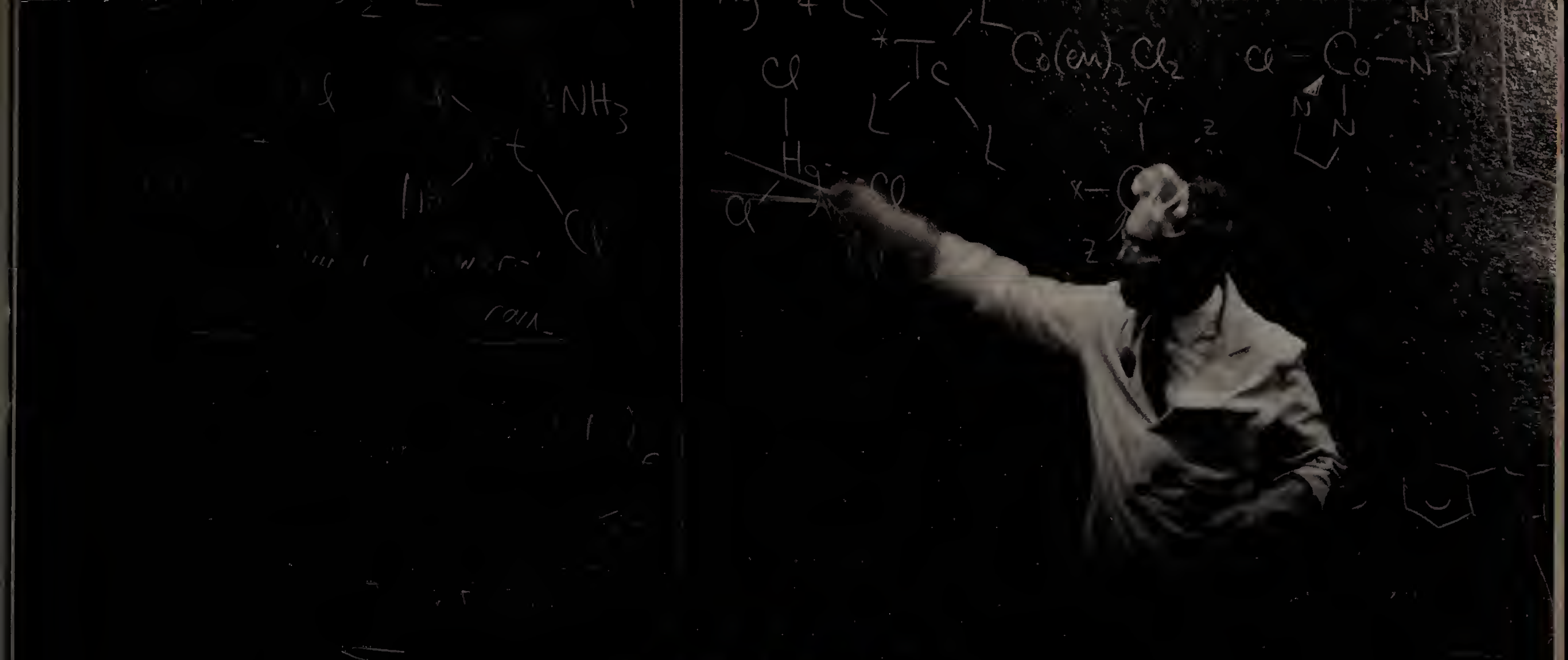
"He's mission-driven," Rose says. First, Hitchcock had to convince CAST's board of directors that Bobby was possible. He and Krieger spent hundreds of hours outside their normal workday to make Bobby a reality. As director of CAST's Universal Design Laboratory, Hitchcock leads a half-dozen other learning projects.

Bobby was first released in 1996 as a server application that tested one page at a time. Today, Bobby Version 3.0 can test entire Web sites in minutes thanks to Java applications. Bobby now tests more than 3 million Web pages per month; there have been about 8,000 downloads of the software since August 1998. CAST has also recruited sponsors such as Sun Microsystems Inc., Microsoft Corp. and IBM.

"Bobby is becoming of increasing interest to businesses and government because of requirements for accessibility of Web sites . . . under the Americans with Disabilities Act," says Judy Brewer, director of the World Wide Web Consortium's Web Accessibility Initiative in Cambridge, Mass.

Hitchcock acknowledges that, so far, most Bobby users are disability rights advocates and individuals, not corporations. But he says that will change — especially as businesses start to address the needs of aging baby boomers. ▶

> Bobby is becoming of increasing interest to businesses and government.
>
> JUDY BREWER, WORLD WIDE WEB CONSORTIUM



E-COMMERCE
SECURITY
DOESN'T HAVE TO BE SO
E-COMPLICATED.

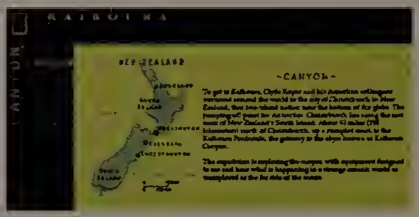
When you've got the right security solution, taking the leap into e-commerce isn't so intimidating. SAFEsuite from ISS prioritizes security risks on the fly, paving the way for e-commerce profits. Our enterprise-wide approach to security policy compliance, vulnerability management, and intrusion detection makes it simple. SAFEsuite constantly monitors, detects, and responds to risks. It applies the knowledge base of the industry's leading security experts. And it gives suppliers and customers the wide access they demand. Find e-commerce security answers with SAFEsuite. Visit www.iss.net/safesuite or call 1 800.776.2362.

ISS
INTERNET SECURITY SYSTEMS
www.iss.net/safesuite

COMPUTERWORLD SMITHSONIAN AWARDS FINALISTS

Continued from page 44

dubbed a "museum without walls."



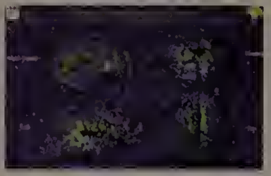
- A **National Geographic Society** Web site follows an expedition in search of the giant squid in the Kaikoura, New Zealand.
- Thanks to the **Starbright Foundation**, children and teens with serious health conditions use a private interactive network to reach outside their hospital rooms to a peer support group.

Medicine

- At **Egleston Scottish Rite Children's Health Care System** in Atlanta, an around-the-clock call center for pediatric care handles a half-million calls per year.
- The **European Institute of Telesurgery** is developing virtual-reality models of human organs to support next-generation surgical techniques.
- **HBS International Inc.** has a national health care database for comparing clinical practice patterns.
- At **Pfizer Inc.**, vast amounts of data from the clinical trial of new drugs flow into a centralized database, saving time so that new drugs are ready for market sooner.
- The largest and most comprehensive Web site on AIDS is run by the **University of California at San Francisco AIDS Program** at San Francisco General Hospital (see story at right).

Science

- Position Emission Tomography imaging from **CTI Inc.** allows non-invasive views of cancers, the heart and neurological processes.



- The **Montreal Neurological Institute** uses 3-D scans and high-performance computing to measure the brain's response to drugs and cognitive stimuli.
- A 60T-byte storage facility at the **National Center for Supercomputing Applications** gives scientists rapid, reliable access to their data sets, freeing the facility's supercomputers to focus on actual calculations.
- At the **Pittsburgh Supercomputing Center**, a long-running simulation on a massively parallel supercomputer provides new insights about proteins.
- **Jack Kilby** invented the monolithic integrated circuit at Texas Instruments Inc. and changed the world.

Transportation

- **Continental Airlines Inc.** unveiled new Global Positioning Satellite technology that could result in safer jet landings, quieter neighborhoods, less fuel consumption and fewer flight delays.
- **Datus Inc.** developed the first handheld vehicle navigation system with automatic voice instructions for motorists.
- In **Georgia,** hundreds of on-highway traffic monitors – along with changeable highway signs and radio transmitters – help drivers steer clear of congestion.
- **Orient Overseas Container Line Ltd.** has an object-oriented information system that supports the rapid flow of international freight in 57 countries.
- Automated cameras at 20 high-accident intersections in **Charlotte, N.C.**, result in 6,000 citations per year and 25% fewer crashes.

Crusading AIDS Site Covers All Bases

BY LAURA HUNT

THE WEB contains hundreds of sites pertaining to AIDS. But which one is the most authoritative and comprehensive? Which one would you go to if your life depended on it?

A good choice would be HIV InSite (*http://hivinsite.ucsf.edu*), operated by the University of California at San Francisco (UCSF) AIDS Program — located at San Francisco General Hospital — and the Center for AIDS Prevention Studies.

HIV InSite provides the credibility of peer-reviewed research, the broad knowledge base of a reference library and the accessibility of popular media. But it's the wealth of AIDS information contained in the site's 23,000 pages that's most impressive.

As one visitor responded to a survey about the site: "Well put together, informative and accessible. This is the most information I've seen assembled in any one spot. Thank you, thank you, thank you!"

Nicole Mandel has been the project manager for HIV InSite since its initial planning meetings in March 1996. "I was involved in a clinical trials database that first covered the San Francisco area, then expanded to California and eventually to the whole country. Since I had that experience, they invited me to meetings, and then they kept inviting me to meetings. I think I became manager by default," she says.

The Henry J. Kaiser Family Foundation approached the UCSF AIDS Program in 1996 with funding to develop the Web site. The centerpiece is a widely used HIV/AIDS textbook — edited by two physicians at the program — that was first published on paper, then on CD-ROM in the 1980s. "The Web was emerging as a publishing platform," Mandel says, "and we already had a body of information with the textbook and our clinical trials [database]."

Library Assistance

The Web site's public debut was in March 1997, after a year of planning meetings. Mandel says the project was helped considerably by the UCSF staff's library. "They held our hands through the whole process. I had a publishing background, but they knew how to get the information online and accessible," she says.

Because it can publish the latest AIDS research faster than professional journals, the Web site fills an information gap in the medical community. "We do present the information with a somewhat academic bent," Mandel concedes. "We don't aim for the least common denominator because that already exists on the Web."

HIV InSite serves as a credible resource for people with AIDS and the general public. For example, the site has a section in which visitor questions are answered by experts at the UCSF AIDS Program. "This kind of access to experts is important — and hard to provide at a local level," Mandel says. "Pretty much everyone who is sexually active will have some questions which need to be answered."

In fact, the site's visitors have represented 150 countries so far. "We've had 100 hits from Croatia and around 20 from Macedonia," she notes.

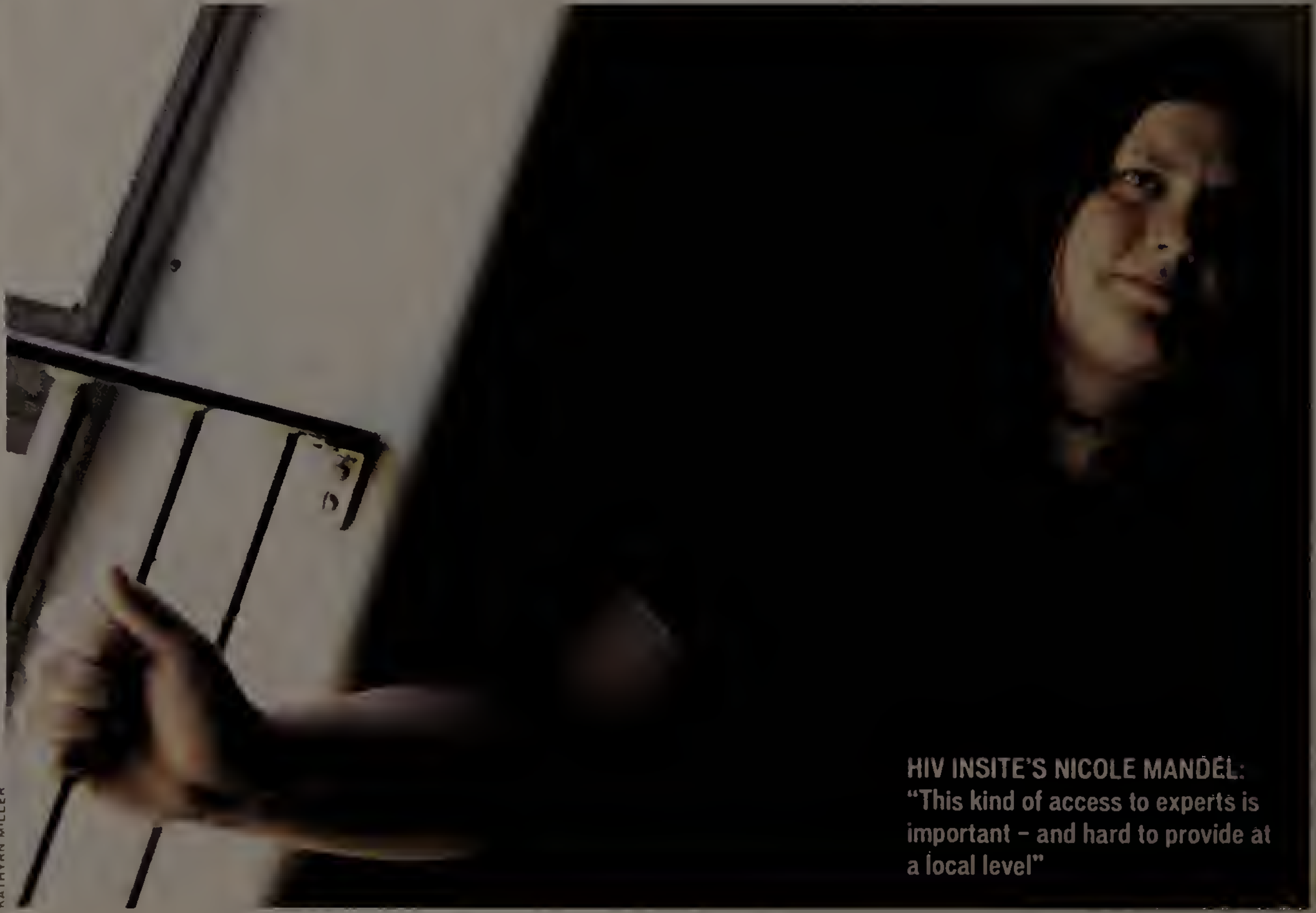
Mandel is focused on continuously evaluating and improving the Web site, redesigning it for better navigation — and perhaps offering video capability.

In essence, the site must evolve along with AIDS treatments, which are becoming more complex. Because more drugs are available, more drug interactions can occur. "We would like to do more [Web] development in the medical section. The information is available but it needs to be more user-friendly. No practitioner is going to read a 60-page paper when a patient in need is sitting in front of them," Mandel says.

The challenge of providing that kind of service keeps Mandel motivated and excited about her work. "It's Monday morning," she says, "and I'm here at 8 a.m!" ◗

MOREONLINE

For details on the 50 finalists in the *Computerworld* Smithsonian Awards program, visit **http://innovate.si.edu.**



KATHYRN MILLER

HIV INSITE'S NICOLE MANDEL: "This kind of access to experts is important – and hard to provide at a local level"

www.ericsson.com/axd301
ERICSSON
AXD

ANDERSON & LEMBKE AMSTERDAM

How often do
the phones crash?
(Still think your
datacom is reliable?)

When it comes to mission critical services, Ericsson has been developing and implementing carrier-class switching systems longer than anyone. It's this experience we're now bringing to bear on datacom – in the shape of a new high-performance ATM switch.

You'll be hard pressed to find a more reliable switch than the AXD 301. With full system redundancy and in-service upgrade and expansion, your network will simply not go down.

It's also the most scalable ATM switch around – the AXD 301 is designed to scale from 10 Gbps to 160 Gbps. You can standardize all your switching needs on one system – from the massive core switch to the smallest node. With the AXD 301 you 'pay as you grow'.

And naturally it comes with complete ATM functionality, voice capability and a smart way to run IP traffic, making it ideal for the latest multi-service networks.

Which all goes to explain why, when large carriers pick up the phone to order large ATM networks, they're now calling Ericsson.

ERICSSON

Windows 2000 Beta 3

the possibilities are endless...

The opportunity isn't.

Limited quantities of Microsoft® Windows® 2000 Beta 3 are available now through the Windows 2000 Corporate Preview Program.

Now's your chance to get a competitive edge and make sure you're ready for the next generation of business computing. Sign up today for the Windows 2000 Corporate Preview Program. For just $59.95* you get Windows 2000 Beta 3 plus all the tools and support you need to install and evaluate Windows 2000 on your laptop, desktop, and server machines.

Quantities are limited, so act now: call your local Microsoft Certified Solution Provider, or order the kit directly at

www.microsoft.com/windows2000/beta3

Microsoft® Windows® 2000

Microsoft®

Where do you want to go today?®

*Shipping and handling are additional.

©1999 Microsoft Corporation. All rights reserved. Microsoft, Windows, the Windows logo and Where do you want to go today? are either registered trademarks or trademarks of Microsoft Corporation in the US and/or other countries.

BUSINESS

LINKING TO EYEBALLS

Sure, advertising can build hit rates, but to rake in eyeballs and cash, try paying other sites a percentage of sales to link to your e-commerce site. It adds incremental revenue and pulls in customers you might not see otherwise. ▶ **50**

Y2K WOES FOR OIL AND GAS

To cover all the bases, Congress is questioning oil and gas vendors about Y2K repairs that they started too late. Experts expect some failures, albeit minor ones, and urge vendors to join together for better contingency planning than any could do alone. ▶ **52**

ANALYZE THIS

Prudential is overcoming a legacy of weak analysis to get a better picture of who its most profitable customers are. It has no other choice: Regulatory changes are forcing it to compete with high-tech financial services companies. ▶ **53**

OVERHAULING HEALTH CARE IT

Health care IT gets a bad rap for inefficiency, but most systems were designed to see a patient just on the way in and the way out, hospital CIO Thomas W. Smith says. But he's overhauled his own systems to deal with new medical needs. ▶ **54**

GENDER GAP

Even in a job market that's driving many salaries through the roof, women in IT still make 81 cents for every dollar earned by male counterparts, on average. Many change jobs, but some are stuck — and frustrated. ▶ **56**

FED, NOT IT, GETS THE CREDIT

Paul A. Strassmann takes up the debate over computerization and productivity before Alan Greenspan and the Federal Reserve Board, which, he argues, has done far more to improve productivity than IT has. ▶ **58**

LIFE AFTER Y2K

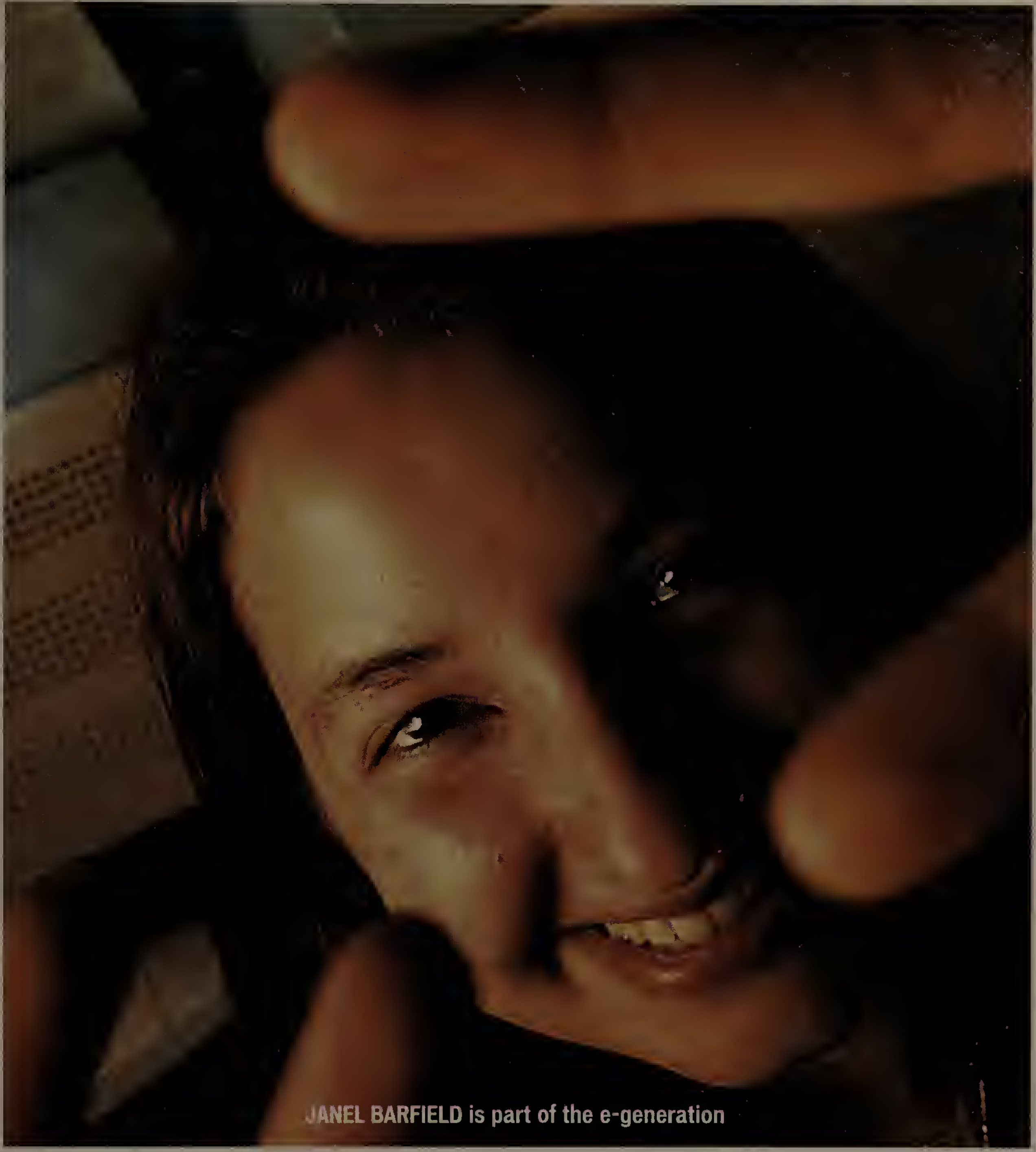
Year 2000 projects have been a huge priority for the past three years. So what happens after they're done? E-commerce is one hot area, but can your Y2K-heavy staff do the job in the next century? ▶ **62**

BEWARE OF LEASE BARGAINS

Beware of losing flexibility going for a low lease price. Joe Auer tells the tale of a food company that succumbed to temptation and almost paid the price when its requirements changed. ▶ **74**

MORE

Business advice 74
Careers 56
E-commerce 50
Opinion: Paul Strassmann .. 58
QuickStudy 60
Year 2000 52



ANDREW YATES

JANEL BARFIELD is part of the e-generation

HOT YOUNG PROGRAMMERS

THEY'VE BEEN PROGRAMMING since grade school, teaching themselves technology as they sailed through school. Now in college and interning at prestigious companies, they compete to be the best of the e-generation. *Computerworld* profiles four participants in a collegiate programming contest for a look at IT's future: Who the best and the brightest are, how they got there and what they're interested in.

70

Affiliates: Smart Marketing

Links to Web stores bring in customers, cost less than portals

BY JULIA KING

Forget banner ads and buying space on portals. If you really want new online customers, make friends with a few thousand affiliates.

At last count, e-commerce poster child Amazon.com Inc. had more than 200,000 affiliates that add links to Amazon.com on their sites for a 15% commission on sales. CDNow Inc. has 160,000 affiliates through which the online music retailer has estimated it acquires one out of every four new customers.

"They're the equivalent of 160,000 deputies all selling [CDNow's] products," said Ray Satterthwaite, an analyst at Gartner Group Inc. in Stamford, Conn.

Affiliate programs under which clubs, special-interest groups and niche marketers sell various companies' products on their sites for a cut of total sales aren't nearly as widespread as deals with portals, according to analysts.

Still, advertising and e-commerce experts — and increasingly, users themselves — say affiliate programs are more effective because of their pay-for-performance structure.

Banner ads, for example, cost companies millions of dollars, whether or not they bring in customers. Affiliate programs, on the other hand, cost a Web business money only when an affiliate sells products through its site.

For example, online retailer Barnesandnoble.com pays its partners, which include CNN.com, between 5% and 7% of sales generated through the their sites.

Affiliate sites are also more successful at "context selling," or attracting customers looking for particular products. Led Zeppelin fans, for example, are likely to buy the rock group's CDs, so it behooves CDNow to provide a link to its own Led Zeppelin offerings on the fan club's Web site.

Several big Web sites already have caught on.

Online investing company ETrade Group Inc. recently announced a strategic partnership with The Motley Fool, an online financial information site. The ETrade site will have a hot link to Motley Fool's site and vice versa — an arrangement ETrade executives hope will increase hits on their own site by people ready to invest online.

"As a leading authority in financial news, Motley Fool communicates with one of ETrade's target audiences — individuals who do their own research and make their own investment decisions," said Jerry Gramaglia, ETrade vice president of marketing and sales.

Last month, Staples.com, an online retailer of office products, also announced an affiliate program. But it's outsourcing the integration work needed to link affiliate sites and companies' online product catalogs to Be Free Inc. in Marlboro, Mass.

Be Free also provides customers with reports of where sales are coming from. It charges the customer 2% of the value of all transactions, according to company President Gordon Hoffstein. ◗

Getting the Word Out

Which techniques do you use to drive traffic to your Web site, and how effective are they?

POPULARITY	
Banners	89%
Buttons	55%
Television	30%
Affiliate programs	17%

EFFECTIVENESS (SCALE OF 1-5)	
Affiliate programs	4.3
Television	4.0
Banners	2.8
Buttons	2.0

Base: Survey of 47 marketing managers at large companies with Web sites; multiple responses allowed

SOURCE: FORRESTER RESEARCH INC., CAMBRIDGE, MASS.

Reader's Digest Turns the Page to Growth

Plans to build Net partnerships

BY THOMAS HOFFMAN
PLEASANTVILLE, N.Y

After six months of cost-cutting and restructuring, The Reader's Digest Association Inc. is done abridging and ready to start growing again.

READER'S DIGEST'S Jeffrey Spar: Selling health care advice over the Web is profitable

The cutbacks were designed to compensate for sagging sales of the 77-year-old company's books, recorded music and video products. With much of that work behind it, the $2.6 billion firm is now set on building business using its strength in database marketing. One of the new strategies is to build partnerships with financial services and health care firms to cross-sell credit cards, prescription drugs and other products and services to its 100 million customers and other prospects.

"The place you can make money is to sell health care advice or prescription drugs via the Web," said Jeffrey Spar, the 34-year-old CIO who joined Reader's Digest last November from McKinsey & Co. in New York, where he worked as an IT consultant for consumer, health care and media companies for eight years.

Reader's Digest is leaning on IT to grow revenue in a couple of areas. For example, the company is using its massive Storage Technology Corp.-based data farm to crunch information about the 100 million names in its customer lists to determine which of its books and magazines are most profitable so it can promote them the hardest. "We're not going to do a wholesale write-off of different products, like determining whether [a particular magazine] is worth keeping," Spar said. "It's more an issue of how we can sell things better, faster, cheaper."

Reader's Digest discovered that a very high percentage of its sales were being made to a very small percentage of its customers, maybe 10%, said Dennis McAlpine, an analyst at Ryan, Beck & Co. in New York.

Still, with so many prospective sales leads at its fingertips, Reader's Digest is also looking to create cross-selling opportunities with banks and health care companies. ◗

Bean Backs Brick and Mortar

Senior vice president says in-person sales will justify investment in stores

Catalog giant L. L. Bean Inc. is usually tight-lipped about its information technology plans. But May's announcement by the $1 billion privately held retailer that it would open brick-and-mortar retail stores has executives talking.

Q&A

Robert Paquin, senior vice president of operations and information services, spoke with *Computerworld* senior writer Stacy Collett about how his 300-member staff and $25 million IT budget will do the job.

Q: How will IT systems be modified to accommodate these stores?

A: We'll be making enhancements to our inventory systems and financial systems and certainly additional network support for point-of-sale-type systems. But there are no significant additional needs within the [information systems] organization.

ROBERT PAQUIN has established process-aligned teams

Q: Who will support the information systems requirements of the retail stores?

A: In our information systems group, we have process-aligned teams that support business processes [networking, point-of-sale support, communications]. We established the retail services process-aligned team, which is responsible for the core system support as well as integration with support systems, accounting, payroll, etc. We took people from each team and pulled them into a group.

Q: Will you purchase a merchandise management system?

A: A year ago, we initiated an internal project for merchandise planning and forecasting. But store replenishment and assortment planning is truly unique. That retail services team will decide [whether a new system is needed].

Q: How will this new channel affect your online selling efforts?

A: We continue to roll out our electronic-commerce strategy and business. That channel is profitable. We don't see [brick-and-mortar stores] replacing or displacing other channels. ◗

Know your **customer's** next **move**

Competition is growing. Stakes are higher.

The SAS® Solution for Customer Relationship Management provides a winning strategy for identifying your most profitable customers. And keeping them loyal.

Collect information at all customer contact points

Analyze data to better understand customer needs

Refine business strategies around your most desirable customers

To get to know your customers, get to know the only software that integrates the full scope of managing customer relationships. For our **free guide**, *Identifying and Responding to Your Most Valued Customers*, visit us at **www.sas.com/nextmove**

The Business of Better Decision Making

FORTUNE 100 BEST COMPANIES TO WORK FOR

SAS Institute

www.sas.com/nextmove E-mail: cw@sas.com 919.677.8200

In Canada phone 1.800.363.8397. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies. Copyright © 1999 by SAS Institute Inc. 23689US.0599

Oil Industry's Y2K Effort Drawing Mixed Reviews

Reports differ on readiness, but consensus predicts resulting problems will be minor

BY PATRICK THIBODEAU
WASHINGTON

UNLIKE THE U.S. Senate's Special Committee on the Year 2000 Problem, Gerald Calaway believes that oil and gas companies will fix their millennium bug in time.

The alternative is grim. "If they're not ready, then we're all not ready," said Calaway, president of Calco Express Inc., a Green Bay, Wis., trucking firm.

Industry experts and analysts expect some oil and gas system failures when the date change occurs, but most observers believe the resulting problems will be short-lived.

The Senate Y2K committee released a U.S. General Accounting Office report that said year 2000 repairs by the oil and gas industry are lagging. "It appears they started too late," said Sen. Robert F. Bennett (R-Utah), the committee chairman.

Bennett and the GAO said oil companies are developing contingency plans independent of each other. They urged the companies to create a nationwide cooperative contingency plan. The American Petroleum Institute, a trade group in Washington, said a recent survey of approximately 1,000 oil and gas producers found that 94% will be ready by Sept. 30. "That's three months ahead of the year [rollover]. Three months is a long time," said spokesman Juan Palomo.

But three months isn't long enough, said James Hamilton, assistant director at the GAO. Electric companies, for example, have discovered that some replacement parts for embedded systems aren't on the shelf. "It might take four to six months to get a replacement piece," Hamilton said.

Gartner Group Inc. in Stamford, Conn., which has put the oil industry at "high risk," said it expects system failures. But 90% of the problems that occur should be resolved in 72 hours or less, said Richard Hunter, a Gartner analyst.

Mobil Corp. in Fairfax, Va., is advising business customers to "not go out of the way" to prepare for problems, said spokesman Don Turk. He said oil systems are already prepared to deal with interruptions such as those caused by natural disasters. Half of U.S. oil comes from overseas; Gartner is forecasting problems in top oil-producing countries such as Saudi Arabia and Venezuela. ◗

JUST THE FACTS

All About Oil

- **U.S. oil production averages 6.4M barrels per day, but 8M barrels per day must be imported to meet demand.**
- **Venezuela is the top foreign crude oil supplier at 1.7M barrels per day. Canada is second at 1.5M barrels per day, followed by Saudi Arabia at 1.4M barrels per day.**
- **The U.S. has 560M barrels in reserve supply, located in huge underground salt caverns.**

Stat! Will That Defibrillator Work on Jan. 1?

Hospitals divided on what testing is needed

BY PATRICK THIBODEAU
WASHINGTON

When it comes to the year 2000 and biomedical devices such as a defibrillator or central monitoring station, the only thing Ken Horanoff trusts is his own compliance test.

Even if a manufacturer says a device is year 2000-compliant, "We're not taking their 100% [assurance] for granted," said Horanoff, facilities system administrator at North Arundel Hospital in Glen Burnie, Md. Testing is a matter of "due diligence," he said.

A year 2000 failure in a hospital's equipment or systems could potentially kill patients. But hospitals are divided as to the best approach to ensure that equipment will function properly on Jan. 1, 2000.

Some, like North Arundel Hospital, get the manufacturer's data but also conduct their own tests to check it. Others believe the Y2K test data provided by manufacturers is enough.

"For the most part, the manufacturers have been doing honest testing," said William Rice, a biomedical engineer at St. Joseph's Hospital in Marshfield, Wis., which is mostly relying on such tests for Y2K compliance. "The only problem we are experiencing right now is that many manufacturers have not completed testing."

Federal officials said the significant medical equipment and system manufacturers are providing accurate Y2K compliance information. To do anything less is to risk federal criminal penalties, said Thomas Shope, special assistant to the director at the U.S. Food and Drug Administration, which regulates medical devices.

"I know of no significant instance where the manufacturer has not provided the correct information," Shope said. He said hospitals lack the expertise to do anything other than superficial compliance tests on biomedical devices.

Yet keeping up with Y2K compliance information from vendors may be a challenge, said Joe Ackerman, executive director at the Rx2000 Solutions Institute in Minneapolis. Rx2000 is an organization of health care groups and vendors with a member-supported Y2K information clearinghouse.

"You need to keep monitoring. In some cases, the story is changing," Ackerman said.

At North Arundel, Horanoff said the hospital hasn't found any year 2000 problems. Most of its equipment is less than 5 years old and is already Y2K-compliant, he said. ◗

BRIEFS

Survival Guide Now Available

The Securities Industry Association in New York has released a survival guide for U.S. financial services companies to develop contingency plans for the year 2000 problem *(www.sia.org).*

Database Integrated With Tivoli Manager

The WRQ Express 2000 Knowledgebase, which contains Y2K compliance information on nearly 8,000 applications from about 1,000 PC software manufacturers, has been integrated with the Tivoli Manager for Year 2000, Seattle-based WRQ Inc. announced last week. The integration product enables Tivoli Systems Inc. customers to pull software compliance information from the database into reports provided by Tivoli Manager.

Electric Power Will Flow In Dallas

Central and South West Corp. in Dallas last week said it had completed its year 2000 updates and testing of critical power production and delivery systems at its four U.S. electric utility operating companies, which serve 1.7 million customers. The companies are Central Power and Light Co., Public Service Company of Oklahoma, Southwestern Electric Power Co. and West Texas Utilities Co.

SNAPSHOT

Competitor Comparison Update

A second look at how the nation's top three banking companies are doing on their year 2000 work:

	CITIGROUP (CITIBANK)	CHASE MANHATTAN	BANK OF AMERICA
Fortune 500 rank	7	23	11
Costs through March 31	$750M*	$236M	$443M
Estimated total Y2K costs	$900M*	$363M	$550M
Estimate from Sept. 30, 1998	NA*	$363M	$550M
Notes	Company will spend the rest of the year primarily completing the remaining external testing, integration testing and production assurance.	Company expects to participate in industry tests throughout this year.	Company will review and revalidate all high-risk business continuity plans in October and November to ensure readiness in 2000.

* Reflects late 1998 merger of Citicorp and Travelers Group. In November 1998 filing, Citicorp alone reported costs of $400M and an estimate of $650M.

SOURCE RECENT 10-Q FILINGS WITH THE SECURITIES AND EXCHANGE COMMISSION

Data Moves Insurer Ahead

System helps Prudential understand customers

BY STEWART DECK

TWO YEARS AGO, The Prudential Insurance Co. of America was in the Dark Ages of data analysis. But the company has quickly modernized and now has customer analysis capabilities that may rival the best in the financial services industry.

"Prior to two years ago, we didn't even have an analytic group," said Alan Satterlee, manager of customer modeling and analysis at Prudential in Newark, N.J. "But that's been changing fast lately."

Prudential is just now beginning to measure the results of its first marketing campaigns based on data analysis provided by the new systems.

To start, last summer the $37 billion insurance and financial services company flipped the switch on a new data warehouse project that connected separate business division data marts. At its core is a central data hub running on an IBM MVS mainframe. Data comes into the hub and is then fed into data marts and analyzed using Cognos Inc.'s Impromptu and PowerPlay software.

Most recently, Prudential added SAS Institute Inc.'s Enterprise Miner data mining software to its collection of tools for in-depth data relationship analysis. The tools will cut large data-crunching projects from as long as a year to as short as a month, company officials said.

Because insurance companies offer so many products, data warehousing has been slow to take hold in the industry because of the difficulties in integrating stovepiped systems, said Patricia Saporito, an analyst at Meta Group Inc. in Stamford, Conn.

"In order to have an effective [data] warehouse, you need an effective model, and getting disparate business units to agree on a model is usually like herding cats," she explained.

"But then once you achieve those commonalities, you can start to do better customer relationship management and data mining. Of insurance companies, Prudential may be in the lead" in this type of application, she added.

Now that Prudential has its data warehouse operational, the focus is on ensuring data quality and figuring out what data marts to add, said Pat Komar, a vice president of information systems at Prudential.

With the new system, Prudential analysts have started looking into which customers are most profitable, which are likely to leave the company and which might be most open to cross-selling.

The push for insurers to know their customers better comes from new competition. "We're competing with financial institutions now because customers are seeing other financial products as a substitute for life insurance," Satterlee said. "So we have to be that much sharper." ◗

JUST THE FACTS

Improving 'the Rock'

Company: Prudential Insurance

Ongoing Project: Improve customer relationship management systems for cross-selling and better marketing

Tools used: Data analysis software from Cognos; data mining software from SAS Institute

Project Update: $500K Data Archive at GATX Capital Has Paid for Itself

BY THOMAS HOFFMAN

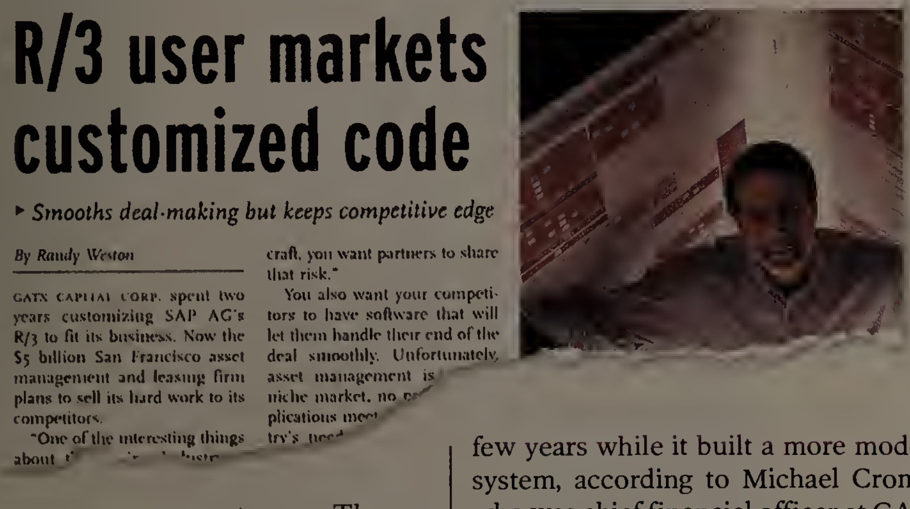
Companies that lease commercial and industrial equipment like river barges and steel-mill furnaces have to keep tabs on contracts that can run anywhere from three months to 25 years.

GATX Capital Corp. tried to make its contract management and other business systems more effective by moving to an SAP AG R/3 environment [CW, Jan. 5, 1998] and implementing a $500,000 data archiving system. The combination was designed to make legacy contract information more accessible to contract administrators and customers. The system, iXOS-Archive from iXOS Software Inc. in San Mateo, Calif., paid for itself in less than a year by enabling GATX to retire its expensive legacy leasing system faster after it installed R/3.

"It's a nightmare" to keep track of hundreds of leasing contracts, said Jim Mathison, director of enterprise applications development at GATX. Because GATX leases out everything from commercial aircraft to forklift trucks, it has to be able to react quickly to deliver contract information to customers if there's a sudden upturn or downturn in a particular market. For example, the current market for hopper railroad cars that carry grain is soft, so customers might want faster access to their contracts if they don't need to lease as much equipment, Mathison said.

GATX officials decided to install the system because if they didn't, they expected to have to give customers access to the company's homegrown Cobol leasing and general ledger systems for a few years while it built a more modern system, according to Michael Cromar, who was chief financial officer at GATX at the time. (He left the company in March to join IBM Global Financing.)

A one-year payback for a half-million-dollar archiving system is fairly common for companies like GATX because legacy software licensing fees "can get pretty exorbitant," said Kris Newton, research manager at Strategic Research Corp., a Santa Barbara, Calif.-based storage technology research company. ◗



R/3 user markets customized code

▸ *Smooths deal-making but keeps competitive edge*

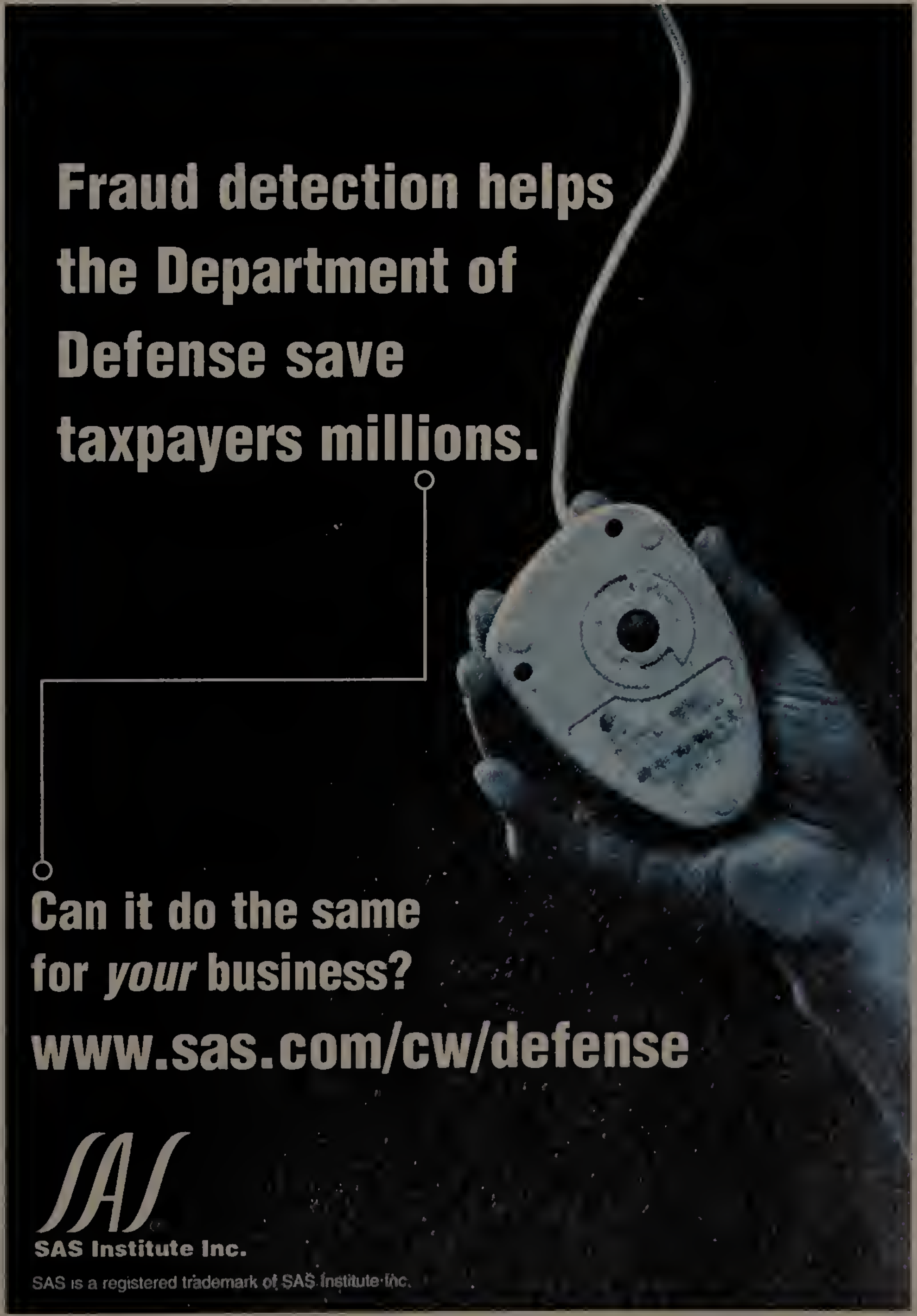
By Randy Weston

GATX CAPITAL CORP. spent two years customizing SAP AG's R/3 to fit its business. Now the $5 billion San Francisco asset management and leasing firm plans to sell its hard work to its competitors.

"One of the interesting things about

craft, you want partners to share that risk."

You also want your competitors to have software that will let them handle their end of the deal smoothly. Unfortunately, asset management is niche market, no plications


Fraud detection helps the Department of Defense save taxpayers millions.
Can it do the same for *your* business?
www.sas.com/cw/defense
SAS
SAS Institute Inc.
SAS is a registered trademark of SAS Institute Inc.

Going . . . for the gold

Despite higher salaries for IT workers, many women still make less than their male colleagues. One reason: They don't change jobs as often

SUSAN LEVAN

BY DEBORAH RADCLIFF

LAST YEAR, "CANDY," a programming manager at an East Coast manufacturing company, knew full well she was earning $15,000 less than her male counterpart. She also knew that other women were underpaid at the company. She processed the company payroll.

"DEE" HAS 12 YEARS' EXPERIENCE implementing enterprise systems and a business/information systems degree under her belt. But she's been passed over for promotions and given poor raises at the East Coast health care facility where she works. She claims it's a result of gender bias.

TWO SOFTWARE ENGINEERS were being hired by a growing company last year. Both had computer science degrees from top universities and equal experience. But the initial offer to the woman was $4,000 less than to the man. "The vice president of engineering bumped her offer up a little, saying, 'Don't want it to look too discriminatory,' " says "Ted," who witnessed this.

Although their names have been changed, these are real people with real stories. With the information technology skills shortage, you'd think that discrimination wouldn't exist.

Yet last year, female programmers earned 81 cents for every dollar male programmers earned, and female operations systems analysts earned 80 cents on the dollar, according to the Bureau of Labor Statistics. Female IT workers also received smaller raises than men last year — 10.2% as opposed to 12.1% — according to a 1998 Annual Salary Survey by the SANS Institute, a Colorado Springs technology research and education cooperative.

"Diane," a technology support manager at an East Coast distribution company, sees the devaluation of women's contributions all too often. The only people who still punch a time clock at her company are women, she says. And in meetings, men flippantly dismiss her ideas. "It's reinforced here that nature bestows more technical savvy on males," she laughs.

Carolyn Leighton, director of Women in Technology International in Los Angeles, says women themselves are subtly programmed to devalue their own contributions. "There are some very strong socialization issues that make women feel that we're not quite entitled to everything men get," she says.

According to Leighton, when female IT workers feel entitled to equal pay, they'll get it. "The women I meet who are getting more pay and bonuses are women who feel entitled. Those who aren't, don't," she says.

Here's where the high demand for skilled IT workers has given women more opportunities. Now, women can easily find jobs that pay more. "Those willing to move around — those who are willing to indicate to their supervisors that they're mobile — they're the ones who will get more pay," Diane says.

But another IT worker, "Rebecca," hasn't changed jobs in eight years because of family obligations. "You can imagine how far [behind] I am in pay right now," she says of her $29,000 annual salary. "A year ago, I did threaten to quit, and they offered me more money." Still, she says she plans to leave the IT field to start a home-based jewelry business.

Diane fared better because she changed jobs. She says she's paid fairly at her new job and that her manager treats her "with the degree of respect" she deserves. So she's willing to put up with "the weirdest comments" from certain men in the organization, she says.

In May, Dee also tendered her resignation and headed for a job in academia, where she feels treatment might be more equitable. And now that Candy's taken a new job, she's making more than some of her male counterparts.

Sarah Banda Purvis, an author (see Illusions and Inclusions, below), says that those who leave will make more money: "Because there's a demand for resources in the IT industry right now, employers might be more willing to negotiate to attract employees to stay." ◗

Radcliff is a freelance writer in Santa Rosa, Calif.

Illusions and Inclusions

It would be easy to bash men for gender-based salary discrimination. But the problem is one of displaced power, argues Sarah Banda Purvis, who wrote an online publication, "Insider Views on Work Place Issues - The Illusion of Inclusion" (*www.insiderviews.com*).

And, if the shoe was on the other foot, would women be more willing to relinquish their position of power?

Still, not all men are unsympathetic. "There are many very intelligent, perceptive men that understand the plight of women in the workforce and are interested in this issue," Purvis says.

Indeed, one man, Sen. Tom Harkin (D-Iowa), is sponsoring one of two bills before the Senate. He reintroduced the Fair Pay Act in April. The other Senate bill, the Paycheck Fairness Act, was also reintroduced in the current Congress, by Sen. Tom Daschle (D-N.D.). Both bills, which are sitting in various subcommittees, have received strong endorsements from elected representatives. – *Deborah Radcliff*

Higher Pay for Senior Female Workers

Women in top technology echelons are making more equitable pay than those in mid- and low-level jobs. The Bureau of Labor Statistics reports that female systems scientists have nearly caught up with their male counterparts, earning 89.4% of what men earn.

And according to a just-released report by the Institute of Electrical and Electronics Engineers Inc., female computer engineering professionals are faring slightly better than men among those with 10 to 14 years of experience. According to the report, women in this group average $79,000 per year, while men average $75,000.

Gender Gap

JOB TITLE	MALE MEDIAN WEEKLY INCOME	FEMALE MEDIAN WEEKLY INCOME
Systems analyst/ scientist	$996	$890
Operations systems analysts	$937	$750
Computer programmers	$884	$715

SOURCE: BUREAU OF LABOR STATISTICS, 1998 "USUAL WEEKLY EARNINGS OF EMPLOYED FULL-TIME WAGE EARNERS"

Short of reading payroll data, the only way to know what you're worth is to do outside research to learn the average pay scale for your line of work. A couple of good places to start are *Computerworld*'s Annual Salary Survey (*http://computerworld.com/home/features.nsf/all/990329salary_main*). Or check the surveys at one of the leading job placement Web sites.

Pencom Systems Inc., for example, has an interactive salary guide on its Web site (*www.pencom.com*).

– *Deborah Radcliff*

"Our readers don't think about business in terms of technology. In fact, a lot of the people I talk to aren't even in the IT department. They're marketing managers trying to figure out how to use e-commerce to sell widgets. Or business owners working to keep their supply chain intact. My job is to help people connect the dots...to see how others are doing things, where the pitfalls are, and how they can avoid them. That's what business leaders need to know. I try to give them some new ideas, to spark their imagination. I want our readers to walk away charmed and connected. But most of all, I want them to come back."

Live Wire

Julia King, National Correspondent

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS

Read Julia King in Computerworld. To subscribe, call us at **1-800-343-6474** or visit www.computerworld.com.

Going . . . for the gold

Despite higher salaries for IT workers, many women still make less than their male colleagues. One reason: They don't change jobs as often

SUSAN LEVAN

BY DEBORAH RADCLIFF

LAST YEAR, "CANDY," a programming manager at an East Coast manufacturing company, knew full well she was earning $15,000 less than her male counterpart. She also knew that other women were underpaid at the company. She processed the company payroll.

"DEE" HAS 12 YEARS' EXPERIENCE implementing enterprise systems and a business/information systems degree under her belt. But she's been passed over for promotions and given poor raises at the East Coast health care facility where she works. She claims it's a result of gender bias.

TWO SOFTWARE ENGINEERS were being hired by a growing company last year. Both had computer science degrees from top universities and equal experience. But the initial offer to the woman was $4,000 less than to the man. "The vice president of engineering bumped her offer up a little, saying, 'Don't want it to look too discriminatory,'" says "Ted," who witnessed this.

Although their names have been changed, these are real people with real stories. With the information technology skills shortage, you'd think that discrimination wouldn't exist.

Yet last year, female programmers earned 81 cents for every dollar male programmers earned, and female operations systems analysts earned 80 cents on the dollar, according to the Bureau of Labor Statistics. Female IT workers also received smaller raises than men last year — 10.2% as opposed to 12.1% — according to a 1998 Annual Salary Survey by the SANS Institute, a Colorado Springs technology research and education cooperative.

"Diane," a technology support manager at an East Coast distribution company, sees the devaluation of women's contributions all too often. The only people who still punch a time clock at her company are women, she says. And in meetings, men flippantly dismiss her ideas. "It's reinforced here that nature bestows more technical savvy on males," she laughs.

Carolyn Leighton, director of Women in Technology International in Los Angeles, says women themselves are subtly programmed to devalue their own contributions. "There are some very strong socialization issues that make women feel that we're not quite entitled to everything men get," she says.

According to Leighton, when female IT workers feel entitled to equal pay, they'll get it. "The women I meet who are getting more pay and bonuses are women who feel entitled. Those who aren't, don't," she says.

Here's where the high demand for skilled IT workers has given women more opportunities. Now, women can easily find jobs that pay more. "Those willing to move around — those who are willing to indicate to their supervisors that they're mobile — they're the ones who will get more pay," Diane says.

But another IT worker, "Rebecca," hasn't changed jobs in eight years because of family obligations. "You can imagine how far [behind] I am in pay right now," she says of her $29,000 annual salary. "A year ago, I did threaten to quit, and they offered me more money." Still, she says she plans to leave the IT field to start a home-based jewelry business.

Diane fared better because she changed jobs. She says she's paid fairly at her new job and that her manager treats her "with the degree of respect" she deserves. So she's willing to put up with "the weirdest comments" from certain men in the organization, she says.

In May, Dee also tendered her resignation and headed for a job in academia, where she feels treatment might be more equitable. And now that Candy's taken a new job, she's making more than some of her male counterparts.

Sarah Banda Purvis, an author (see Illusions and Inclusions, below), says that those who leave will make more money: "Because there's a demand for resources in the IT industry right now, employers might be more willing to negotiate to attract employees to stay." ◗

Radcliff is a freelance writer in Santa Rosa, Calif.

Higher Pay for Senior Female Workers

Women in top technology echelons are making more equitable pay than those in mid- and low-level jobs. The Bureau of Labor Statistics reports that female systems scientists have nearly caught up with their male counterparts, earning 89.4% of what men earn.

And according to a just-released report by the Institute of Electrical and Electronics Engineers Inc., female computer engineering professionals are faring slightly better than men among those with 10 to 14 years of experience. According to the report, women in this group average $79,000 per year, while men average $75,000.

Gender Gap

JOB TITLE	MALE MEDIAN WEEKLY INCOME	FEMALE MEDIAN WEEKLY INCOME
Systems analyst/ scientist	$996	$890
Operations systems analysts	$937	$750
Computer programmers	$884	$715

SOURCE: BUREAU OF LABOR STATISTICS, 1998 "USUAL WEEKLY EARNINGS OF EMPLOYED FULL-TIME WAGE EARNERS"

Short of reading payroll data, the only way to know what you're worth is to do outside research to learn the average pay scale for your line of work. A couple of good places to start are *Computerworld*'s Annual Salary Survey (*http://computerworld.com/home/features.nsf/all/990329salary_main*). Or check the surveys at one of the leading job placement Web sites.

Pencom Systems Inc., for example, has an interactive salary guide on its Web site (*www.pencom.com*).

– *Deborah Radcliff*

Illusions and Inclusions

It would be easy to bash men for gender-based salary discrimination. But the problem is one of displaced power, argues Sarah Banda Purvis, who wrote an online publication, "Insider Views on Work Place Issues - The Illusion of Inclusion" (*www.insiderviews.com*).

And, if the shoe was on the other foot, would women be more willing to relinquish their position of power?

Still, not all men are unsympathetic. "There are many very intelligent, perceptive men that understand the plight of women in the workforce and are interested in this issue," Purvis says.

Indeed, one man, Sen. Tom Harkin (D-Iowa), is sponsoring one of two bills before the Senate. He reintroduced the Fair Pay Act in April. The other Senate bill, the Paycheck Fairness Act, was also reintroduced in the current Congress, by Sen. Tom Daschle (D-N.D.). Both bills, which are sitting in various subcommittees, have received strong endorsements from elected representatives. – *Deborah Radcliff*

"Our readers don't think about business in terms of technology. In fact, a lot of the people I talk to aren't even in the IT department. They're marketing managers trying to figure out how to use e-commerce to sell widgets. Or business owners working to keep their supply chain intact. My job is to help people connect the dots...to see how others are doing things, where the pitfalls are, and how they can avoid them. That's what business leaders need to know. I try to give them some new ideas, to spark their imagination. I want our readers to walk away charmed and connected. But most of all, I want them to come back."

Live Wire

Julia King, National Correspondent

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS

Read Julia King in Computerworld. To subscribe, call us at **1-800-343-6474** or visit www.computerworld.com.

BRIEFS

Wharton Starts Business Site

Information technology managers looking to stay abreast of general business trends can check out Knowledge@Wharton (*http://knowledge.wharton.upenn.edu*), a free Web site just launched by The Wharton School of the University of Pennsylvania.

The site will contain analyses of business trends, interviews with industry leaders and Wharton faculty, articles on recent business research, book reviews and links to related Web sites.

To Drive Site Traffic . . .

Though banners and buttons are the most widely used Web marketing tools, they rank near the bottom in effectiveness at driving traffic to Web sites, according to Forrester Research Inc. in Cambridge, Mass. More than 60% of 47 advertisers interviewed combine online, off-line and e-mail promotions to increase site visitation.

Buyers Scarce Among Browsers

Online sales will increase to $18 billion this year, up from $8 billion last year. But the figure is quite small compared with what it could be.

The reason: Only 5.75% of consumers who visit Web sites try to make purchases. And 67% of those attempted purchases are aborted because of customer-service snags, according to a study that was conducted by the British Internet consultancy Net Effect and published in *USA Today*.

Using Tech To Train

*Percentage of corporate training delivered using technology:**

Now	2003
20%	44%

Base: 120 U.S. companies that have corporate universities

*Includes computer-based, videoconferencing, satellite and Internet-based training

SOURCE: [illegible] XCHANGE INC., NEW YORK

Web Impact

How much is the Internet influencing your total sales volume?

SALES VOLUME GROWTH	% OF RESPONDENTS
Up 100% or more	19%
Up 51% to 99%	8%
Up 11% to 50%	32%
Up 3% to 10%	25%
Same to 2%	14%
No growth/ volume down	2%

Base: Survey of 178 premium specialty goods companies

SOURCE: ACTIVMEDIA RESEARCH, PETERBOROUGH, N.H.

System Backup: More is Better

A survey commissioned by American Management Systems during the recent National Association of Purchasing Management conference showed that 40% of the 210 respondents used more than one system to perform their basic purchasing and contracting tasks.

HP Opens an Online Store

Hewlett-Packard Co. will sell HP products to businesses directly on the Web starting this week.

The Business Store, which opens June 8, will offer PCs (including notebooks and servers), networking products, storage products and printing and imaging systems as well as accessories. HP officials said the site will benefit companies that buy in low volumes, know what they want and want immediate fulfillment. The store is at *www.bstore.hp.com.*

PAUL A. STRASSMANN

Credit Greenspan, not computers

THE CHAIRMAN OF THE FEDERAL RESERVE BOARD, Wall Street bankers and assorted chief executives have attributed the enormous gains in the 1990s stock market to productivity-enhancing computerization. The reasoning goes like this: Computer-induced productivity has made it possible to suppress inflation, thus justifying the lowest interest rates experienced by the U.S. in many decades. Low rates, in turn, have led to rising stock valuations.

This way of thinking has been embraced by proponents of the new economy. They proclaim that the new electronic technologies have been harnessed to deliver improved corporate profits and federal budget surpluses that are sustainable for a long time to come.

Whether these claims are true has ceased to be an academic matter. Economists and Wall Street are debating whether the Federal Reserve should increase interest rates to forestall a new inflationary cycle. More is at stake than the string of unprecedented stock market gains: An inflation-induced recession may affect the outcome of the presidential elections. The question of whether information technology has improved productivity is now at the center of the economic stage.

> *Don't take credit for something you didn't create.*

Thus it was that the Federal Reserve's Board of Governors — the most powerful financial policy body in the world — decided to devote its April 15 meeting to hearing evidence about technology-induced productivity gains. I was one of the invited experts, along with senior economists from Harvard, McKinsey Research Institute, MIT, Princeton, Stanford and Yale.

The opinions offered to an attentive board, chaired by Alan Greenspan, were diverse. With the exception of the presentation that correlated purchases of computer capital with gains in stock market valuations, all of the opinions were based on admittedly inconclusive government statistics.

My own presentation (*www.strassmann.com/pubs/frb-041599.pdf*) reviewed the rising productivity of 1,586 U.S. industrial corporations since 1990. The gains could be verified from annual financial reports. The analyses showed that much of the potential gains from computerization were absorbed by the rising compensation of the U.S. information workforce, which includes the fastest-growing occupations such as computer professionals, consultants and lawyers. It wasn't the lower costs of information management but the rising economic value-add of U.S. firms that made the productivity numbers go up.

Did the economic value-add gain because firms were more effective as the consequence of computerization? The answer came after examining the impact of steadily declining interest costs on corporate profits. Had the interest costs remained unchanged since 1990, there would be no productivity gains at all. That proved that the cleverest U.S. monetary policy-making since Alexander Hamilton should take the credit for productivity gains.

What does all this economic analysis mean for CIOs? Simply this: Don't take credit for productivity gains you didn't create. Don't claim that your firm's rising computer spending was responsible for increased profits and stock market valuations. There's no causal link between the two; it would be like arguing that rich people are rich because they buy expensive cars. The value of IT can be demonstrated only after proving that the increased economic value of an organization wouldn't materialize by other means. That evidence will be increasingly sought by corporate executives. CIOs better get ready with verifiable answers. ▶

Strassmann's (paul@strassmann.com) report to the Board of Governors of the Federal Reserve will appear as a book entitled Information Productivity *(The Information Economics Press, July 1999).*

intel inside
pentium III
xeon
PROCESSOR

REMEMBER WHAT IT WAS LIKE TO HAVE SOMEONE YOU COULD COUNT ON?

Check out our new ecommerce site at http://dgnow.dg.com

You can again.

There's a reason why Data General survives in a land of computing giants. We do things no one else will do for you when it comes to enterprise NT. Like deliver TermServer-in-a-Box™ – already configured, tested, and ready to run. And provide superior integration and implementation services.

Our customers say the main reason they buy from us is the value they get from our personal contact and our willingness to be there when they need us.

They also really love our scalable, high-performance, high-availability AViiON® servers, like the AV 3704R based on Intel® Pentium® III Xeon™ processors, 500 MHz. And they say our CLARiiON® Full Fibre RAID storage is the best around. Add top-notch service and support, and you can see why our customers say we're their ideal choice for enterprise NT solutions.

In today's highly competitive environment, trusting your computing partner to be there for you is essential.

Call us. We're the Enterprise NT Solution choice you can count on.

Data General

www.dg.com 1-800-DATA GEN

Microsoft Certified Solution Provider

Microsoft Authorized Support Center

Microsoft Certified Technical Education Center

AViiON and CLARiiON are registered trademarks and TermServer-in-a-Box is a trademark of Data General Corporation.
Intel, the Intel Inside logo and Pentium are registered trademarks and Pentium III Xeon is a trademark of Intel Corporation.
All other brands and products are the marks of their respective holders. © 1999 Data General Corporation.

Discounted Cash Flow

BY JULIA KING

DEFINITION

What it is: Discounted cash flow is a way to calculate the value of a high-priced item over time. In a PC leasing agreement, for example, it's calculated by adding the initial cash down payment to the monthly leasing payments, then subtracting that sum from what it would have cost to purchase the PCs at the outset. *What it means:* Negotiating up front what the residual value of equipment will be at the end of a lease enables an IT manager to use that value — rather than the higher market value — to renegotiate the lease for subsequent terms.

DISCOUNTED CASH flow is the financial equivalent of a bird in the hand being worth two in the bush.

"Somebody can give you $100 today, or they can give you $100 over four years in $25 payments. But the latter arrangement isn't worth as much as all the money up front. It's that simple," says Susan Koski-Grafer, a vice president at the Financial Executives Institute in Morristown, N.J.

To calculate discounted cash flow, you need to look at three things: the initial cash down, the monthly payments and residual asset value. These elements apply whether you're calculating the value of cash paid out over the term of a 30-year home mortgage or a three-year PC hardware lease. That's because all that money has a time value associated with it.

For example, a user company can save money in an information technology leasing deal by not paying for hardware in full. Instead, its cash flow is discounted because it pays over several years, which makes sense because the value of a PC or other hardware depreciates over time. So renegotiating a lease on the same equipment requires IT managers to calculate what they have paid — the down payment and monthly fees — and subtract that from the amount it would have cost to purchase the PCs up front. What's left is the residual value of the asset (see chart).

A Sample Discounted Cash Flow Calculation

$2,000 (price of the PC)
- $200 (down payment)

$1,800 (amount of the lease)

12 months X $100 monthly payments = $1,200

$1,800 - $1,200 = $600
(residual value)

By doing the discounted cash flow calculation, you come up with a figure you can use when negotiating to buy the hardware you had been leasing.

"It's the same with leasing a car. You pay a lot of money in lieu of interest, plus you pay for the actual rental of the car and the depreciation on it," says Donald Orr, professor of management at LaRoche College in Pittsburgh.

What some users don't understand is that vendors frequently try to renew a lease based on the price they could get for the equipment on the secondary market — the market value. That's usually higher than the residual value. It's the equivalent of the Blue Book value in the automobile world.

IT managers who know discounted cash flow calculation have a negotiation advantage because they can predict a vendor's behavior, Koski-Grafer notes (see Q&A).

A savvy IT manager can point out how much more convenient it is for the vendor to re-lease the equipment, even at the residual value. "The manager can say, 'Here's a deal on the table. We do this and it's done,'" Koski-Grafer says. ◗

Q&A Learning to Save the Company Money

Prior to receiving his MBA from Purdue University, Bram Reinders concedes, he was "clueless" about standard financial concepts. But last August, when he was halfway through the executive program, his studies began to pay off. By knowing how to calculate discounted cash flow, he saved $42,000 on a renegotiated lease on SAP R/3 servers for the Chicago-based chemical unit of the multinational company Akzo Nobel NV. Reinders graduated at the end of April and says the $42,000 "more than paid for my MBA."

MARC BERLOW

Akzo Nobel's IT director, Bram Reinders

Q: How exactly were you able to save $42,000?
A: I calculated the residual value of the servers in the initial lease and used that to calculate what my monthly lease expenses should be.

Q: How did this differ from the vendor's calculations?
A: The vendor wanted to start with a higher market value on the equipment. The argument they used [for the higher valuation] was that they could sell it for more on the secondhand market.

Q: How did you change the vendor's mind?
A: I presented my residual value calculation at our meeting, and it was very different from their number, which was based on a fair market value. Then we had a good discussion of what [financial] concepts to use. They were more than a little surprised that I started this discussion. They never thought of an IT director coming in with these kinds of financial calculations. They were flabbergasted. ◗

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

MOREONLINE

For more information about discounted cash flow, visit our Web site.
www.computerworld.com/more

Silicon Graphics is now

That's short for servers, supercomputers and graphics workstations that enable breakthrough insights.

servers may not be what you know us for. But just like our graphics workstations, SGI™ servers have a proven history of doing things other computers can't. Right now, companies around the world are using our servers to solve their toughest business challenges—and gaining a true competitive advantage. From developing new products faster, to mining massive databases for hidden new business opportunities, or sending video streaming simultaneously to thousands via the Internet. So no matter how formidable your task, SGI servers can deliver the performance, scalability and reliability you need to take it on. What's more, our partnerships with premiere software companies mean fully integrated solutions that enable you to leverage your company's assets—and fundamentally change the way you do business. Add in SGI Global Services and you know you have a server solution you can count on. To learn more, visit us on the Web. Because no matter what challenge you're facing, the solution is always in sight.

www.sgi.com

sgi™
The solution is in sight.

©1999 Silicon Graphics, Inc. All rights reserved. Silicon Graphics is a registered trademark, and SGI, the SGI logo, The solution is in sight and Origin are trademarks, of Silicon Graphics, Inc.

After Y2K

What Projects Are Next?

BY KATHLEEN MELYMUKA

IT's PRIORITIES

CORPORATE IT managers have been dreaming Internet dreams while living the realities of year 2000 preparation. But as companies near the Y2K homestretch, the next round of innovation is finally in sight.

How and when they get from here to there will be affected by how they've handled Y2K. Some companies will be wearing completion of huge Y2K projects like a badge of honor to distinguish themselves from their competitors. Others are gradually shifting Y2K resources to other projects as they finish up. Companies that have managed to keep the technology pipeline flowing throughout Y2K projects will be in business-as-usual mode. And for some of the new Internet companies, Y2K was never an issue.

At FDX Corp., more than 95% of applications are already Y2K-certified and back in production. "We feel good about the fact we can say that," says Robert B. Carter, vice president and chief technology officer at the Memphis-based holding company of Federal Express Corp. "That's an important market distinction for the rest of this year."

With Y2K work virtually complete, Carter says, "We can put our emphasis on moving forward." That will mean "putting all of our [bets] on Web-enabled, supply-chain-based enhancements to our base of applications."

Specifically, FDX is planning to redefine the concept of inventory as products in motion. "The more movement you can put in your supply chain, the more effective it will be," he says.

"Anything that's sitting still is money being lost," Carter explains. So FDX is working to make the entire supply chain as accessible to customers as their own warehouses. Through access to FDX's massive data warehouses, customers will know when shipments will arrive and exactly what they contain. That will allow them to plan their production cycles so efficiently that supplies will arrive and be manufactured into products and shipped without ever coming to rest, Carter says. "We actually think this is going to change the world — to change the way markets work."

Many supply-chain projects have been enhanced by companies' Y2K experiences. David Kelble, Y2K project manager at Wawa Inc., a convenience store chain based in Wawa, Pa., says Y2K helped lay the groundwork for some initiatives that are set for next year. "We've been able to clean up our vendor list and put it in one database," he says. "We've talked to a lot of vendors and have a better feel for them, and there's a better general awareness of how we deal with them."

Some companies are gradually shifting out of Y2K gear. "They're keeping an eye on the ball, but they're starting to think what's beyond that," says Jim Huser, vice president for the IT strate-

Continued on page 66

Will You Have Work?

SEARS CIO **JERRY MILLER** says retraining mainframe programmers on hot technologies like e-commerce application development "is a major issue"

BY THOMAS HOFFMAN

As COMPANIES race to complete the bulk of their year 2000 remediation and testing this month in order to leave a full six months for auditing and final repairs, CIOs and other corporate executives find themselves facing a vexing problem: where to redeploy their Y2K staffers.

"We're still trying to figure out how they're going to be redistributed," says Susan Luechinger, director of year 2000 program management at Merrill Lynch & Co. Since 1995, the New York-based brokerage has directed hundreds of in-house programmers and contractors to make its computer systems millennium-ready.

THE STAFF

Every Merrill Lynch employee who has been working on the year 2000 project is guaranteed a job after the company's work is completed, Luechinger says. The brokerage is currently wrapping up its Y2K integration testing to meet a June 30 deadline set by the Securities and Exchange Commission. But beyond that, one of the biggest challenges the firm faces is determining which information technology projects and business units to assign Y2K project staffers to.

Merrill Lynch will still need some of those staffers to continue auditing its systems over the next six months, Luechinger says. But "for many of these people, this has been the most exciting project they've ever been on," she says. "Where do they go from here?"

Luechinger isn't alone. High on the list of challenges that companies face is determining whether Cobol programmers, for example, have the aptitude or desire to be retrained on newer technologies like Windows NT or PeopleSoft once year 2000 mop-up work is completed.

"Retraining Cobol programmers in modern technologies isn't that easy," says Stephanie Moore, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Some companies, like Unisys Corp., are retraining some legacy systems programmers with Windows NT-related skills, Moore says. But Unisys is an IT services vendor, and it's not clear

Continued on page 66

@outdoors
www.rei.com is an IBM e-business

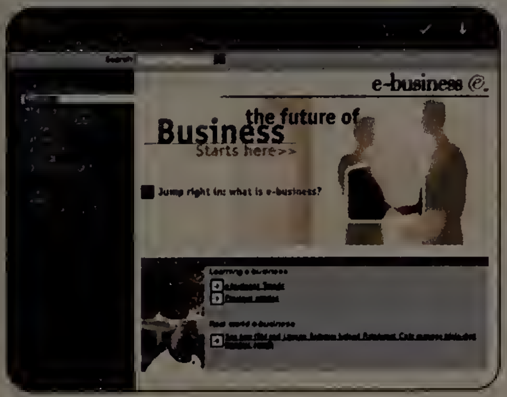
IBM e-commerce software powers the REI online store – and sales that exceed projections by over 360%. Can IBM e-commerce software help you?

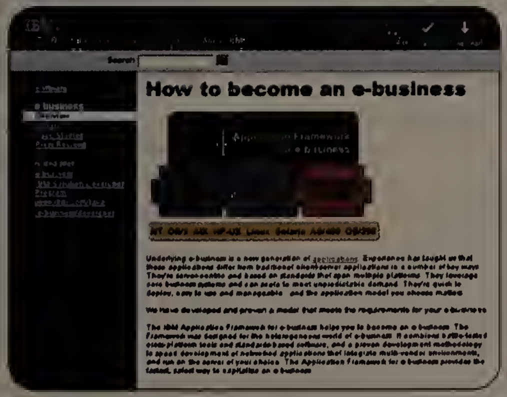
IBM software is helping thousands of companies build, run and manage powerful interactive e-commerce Web sites. For REI, that means everything from state-of-the-wilderness gear you can buy to clinics on outdoor skills, enthusiast bulletin boards and a world of trips and tours. The scope of REI's offerings led them to IBM.

IBM software provides the building blocks for all facets of e-business, including secure payments, electronic catalogs, and order processing. For REI, proven products, such as Net.Commerce, DB2® Universal Database™ and IBM Firewall deliver the scalability, reliability and security it takes to reach, sell and service a growing community of outdoor enthusiasts.

The results have been nothing less than astonishing. In the first quarter alone, REI's sites generated online sales that exceeded projections by over 360%. And these e-sales are 4 times the size of those in their brick-and-mortar counterparts. Bottom line, REI is growing profits far beyond its wildest expectations.

REI is just one example of the thousands of e-commerce businesses IBM software has helped build and grow. From Web storefronts to integrating your business systems and supply chains, IBM offers a breadth of software products simply unmatched by anyone. All backed by the know-how and support of IBM and its Business Partners.


e-business
the future of Business
Starts here>>
Jump right in: what is e-business?


How to become an e-business

Profit from the learning of over 10,000 e-businesses with IBM online resources and our free e-commerce Roadmap. Visit www.ibm.com/software/ec/roadmap

Net.Commerce

Enables you to market and sell in a secure and scalable way on the Internet. Award winning software provides integrated e-commerce capabilities, from site creation to online payments.

MQSeries®

Helps you integrate new and existing applications into your e-commerce solution. Fully Java™-enabled, MQSeries is the world's leading business integration product and works across more than 35 platforms.

DB2 Universal Database

Has the speed, scale and reliability to meet any demand, with seamless integration from virtual storefront to back-end core business systems.

WebSphere™

WebSphere Application Server extends core business functions to Web clients and vice versa. Built-in connectors to databases and other systems help meet high transaction demands on existing and future applications.

IBM software can help you build, run and manage e-commerce solutions on all major platforms.

IBM, DB2 and MQSeries are registered trademarks and Universal Database, WebSphere and the e-business logo are trademarks of International Business Machines Corporation. Java and all Java-based trademarks and logos are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both. Other company, product and service names may be the trademarks or service marks of others. ©1999 IBM Corp. All rights reserved.

Will You Have Work?

THE STAFF

Continued from page 63

whether most Fortune 500 user companies will need large programming staffs going into the new millennium. That's especially true as companies increasingly peddle that work out to systems integrators and outsourcing vendors, Moore says.

Project Superstars

One trend is clear: The sky's the limit — or at least it appears to be — for year 2000 program directors who successfully pull off the granddaddy of IT projects.

Take Michael O'Dell, director of information services at Wacker Silicones Corp. in Adrian, Mich. O'Dell, who has orchestrated the year 2000-readiness of the firm's information systems for the past three years, has been offered a chance to oversee the IT operations for all of the international divisions for Wacker Silicones' parent company in Munich, Germany — Wacker-Chemie GmbH.

After visiting with the parent company, O'Dell decided to decline the offer. The company wanted him to stay for three years, but he wanted to commit to only one. Still, the offer reflects how his employer recognized his prowess in overseeing Wacker Silicones' Y2K effort, which primarily hinges on an implementation of an SAP AG system. "I have to think so," says O'Dell, whose company produces silicons used in computer chips and silicones used in car waxes and rubber.

And it's not as if staying in America will be a dead end for O'Dell's career at Wacker Silicones. He expects to be intimately involved in the company's ongoing SAP project and forthcoming e-commerce initiatives. "I think staying here is the best thing for my career," O'Dell says.

For companies like Wacker Silicones and Owens Corning, employee retention throughout Y2K projects hasn't been a big problem. During an SAP initiative at Owens Corning — which, like that of Wacker Silicones, also took care of much of its Y2K remediation — "we've had periods where our [employee] turnover spiked a little," says David Johns, CIO at the Toledo, Ohio-based building materials maker.

But Owens Corning has worked hard to create a workplace that's rewarding for its 144 IT employees. The company outsources most commodity activities such as its computer operations, network management, help desk and desktop support. What's left is "value-add" work — working on current technologies such as SAP — that keeps its em-

What Projects Are Next?

IT's PRIORITIES

Continued from page 62

gy and planning practice at Cambridge Technology Partners Inc. in Cambridge, Mass.

At a large financial institution, for example, the Y2K project manager is spending one day a week laying the groundwork for a huge new project that kicks in next year. Elsewhere, post-Y2K initiatives have already sneaked under the tent in the guise of Y2K enhancements. "Some people are using Y2K as a vehicle," says Scott Shemwell, who works with the oil and gas industries at Electronic Data Systems Corp. "They know they can get various projects approved if they can tag Y2K to them."

Some companies have escaped a lot of the Y2K pain by converting their systems as part of major corporate facelifts. At Sanofi Pharmaceuticals Inc. in New York, for example, Y2K work has been so integrated into a general overhaul of business systems that it's hardly been an issue. "We've been actively working on Y2K as part of a complete refreshment of our infrastructure, our applications portfolio and our business processes," says CIO Kevin O'Rourke.

Not a Total Distraction

This approach and an early start meant that "Y2K has not prevented us from doing other things," O'Rourke says. For example, Sanofi is in a joint venture with a large pharmaceutical company in which their combined sales forces are co-selling, using the Internet, an extranet, Web sites and secure e-mail to share call and follow-up information.

Many companies used enterprise resource planning (ERP) implementations to lessen the pain of Y2K. "Now we're looking into how we leverage that work and move forward," says Steve Frycki, who heads the year 2000 practice at DMR Consulting Group Inc. in Jersey City, N.J. For example, analysts expect a "second wave" of ERP, where companies will revisit ERP systems hastily implemented as Y2K fixes and fine-tune them for added benefit.

And companies that didn't have time to implement ERP before Y2K will be rethinking that option afterward. "We're looking at the possibility of some enterprise systems," Kelble says. "The timing wasn't right before because we knew we couldn't get those changes in place by Y2K."

But ERP isn't for everybody. At Phoenix Home Life Mutual Insurance Co. in Hartford, Conn., a venerable mainframe system was buffed up for Y2K. Next, it will be moving customer service into the Internet fast lane.

Phoenix will use middleware to bridge the gap between the mainframe and customer-oriented Internet and voice-response systems, enabling customers to see current policy information, submit changes such as new addresses to records and update critical information about their policies, such as the number of people covered. "There's no reason to walk away from these mainframe systems," says Pat Theurkauf, assistant vice president for applications engineering. "We've made the investment to make them Y2K-compliant, and we see great potential for leveraging them."

Peaceful Coexistence

For many companies, Y2K work has not stopped other major initiatives, so their transition from Y2K will be less of an issue. For example, The Home Depot Inc. in Atlanta has been piloting a new concept in customer-centric re-

TAMERA REYNOLDS

FDX CTO ROBERT B. CARTER: With Y2K work almost complete, FDX can move toward "Web-enabled, supply-chain-based enhancements to [its] base of applications"

ployees interested, Johns says.

Even though Owens Corning's year 2000 work was essentially a "by-product" of its SAP implementation, Johns admits that encouraging IT staffers to work on Y2K "took a little more motivation than I [originally] thought — year 2000 is not a very exciting topic."

Smart CIOs have made sure not to buttonhole their staffs with tedious Y2K reprogramming work. For example, most of Sears, Roebuck and Co.'s 1,700-person IT staffers have devoted at least some of their time to the company's year 2000 project, which began in 1994. However, the bulk of the work is handled by 40% of the staff — and that group spends between 20% and 80% of its time on the project at any given stage, says Jerry Miller, CIO at the Hoffman Estates, Ill.-based retailer.

"By not having people work full-time on year 2000, that helps prevent burnout," says Miller, who says Sears' IT staffers are constantly redeployed between Y2K and other IT projects.

Still, Miller admits that retraining mainframe programmers on "hot" technologies — such as data mining and e-commerce application development — "is a major issue for me."

Once most of the year 2000 work is wrapped up, many big companies like Sears are planning to trim back their use of consultants and contractors. Sears, for example, plans to bring down the ratio of contractors-to-IT staff from 9% currently to 5% by year's end, Miller says.

Turtle Wax Inc. in nearby Bedford Park, Ill., plans to cut the cord with three consultants it's using by the end of this month, when it places 2 million lines of application code back into production, says Dennis Lynch, the company's director of IT.

From a Y2K staffing standpoint, Lynch says he has had only one major "surprise" so far — the person who had been responsible for the company's application remediation had to be replaced in October 1998 after the company fell behind in its renovation efforts there. Says Lynch, "We've more or less caught up since then."

Now, the task for Lynch and other IT chiefs is where to go from here.

[Cutting] exorbitant [Y2K salaries] is going to be a thorny issue for CIOs.

STEPHANIE MOORE
GIGA INFORMATION GROUP

As for year 2000 code renovators and mainframe programmers who are cut loose, the future isn't entirely bleak — so long as they're willing to be retrained or recast themselves. Some Cobol programmers "are older and ready for retirement," Moore says. Those who aren't may still find work from mid-2000 going forward as contract programmers because some unforeseen Y2K glitches are bound to occur and companies will be looking for outside help to fix them, says Joe Piteo, vice president of marketing at Software Emancipation Technology Inc., a Burlington, Mass.-based software tools vendor.

Still, some Cobol programmers and other year 2000 staffers who are being paid "exorbitant" salaries to see the projects through will likely have their salaries cut, Moore says. "It's going to be a thorny issue for CIOs" to deal with, she says.

CIOs and analysts believe that any glut of Cobol and other legacy systems programmers will only partly satisfy the demand for skilled IT professionals. That's because some older technologists lack the desire or the aptitude to learn hot technologies such as Java.

Miller, for one, is hopeful that some of his legacy systems staffers can be retrained in newer technologies such as e-commerce and data mining. Miller says, "They may not know these newer technologies yet, but they know Sears' business." ◗

---

tailing called the Expo Design Center, and next year it will be expanding beyond the eight pilot locations. The Expos take a project-oriented, consultative approach to customer service. For example, a customer who wants to redo his bathroom goes to an Expo and has the whole project laid out for him, complete with materials from fixtures to curtains and advice on how to put it all together.

"The Expo focuses on designing a project and working with somebody," says Curtis Chambers, a manager in Home Depot's infrastructure technology group. "It's more of a contact management business than pure retail."

Expos will present some challenges as IT creates new systems to support the new, consultative business model while integrating them with the existing retail systems. "It's a whole new way of doing business," Chambers says. "You have to make sure you follow up with customers and are doing all the right things."

New Front Ends

After Y2K, many customer-service initiatives will face a challenge of marrying back-office systems with new front ends. For example, a large financial institution has been building models to predict the most likely products a customer may need in the future and using technology to get that information to salespeople when they talk with customers.

The project will heat up next year when it faces a huge technological challenge. "The real key is capturing the information you exchange [with customers] and getting it looped back in so it can improve what we do in the next go-round," says the head of customer analysis, who declined to be named.

For example, a customer who's offered a bank loan may tell the salesperson he's not interested today, but next year, when his daughter graduates from high school, a loan for college might come in handy.

Y2K forced a lot of IT people to get better at what they did.

SCOTT SHEMWELL, EDS

"The challenge is to get that kind of information back into the database so that nine months from now it can kick off a trigger to get in touch with you," he says. "How can we treat you like the mythical hometown banker?"

In other words, how can the system use what it's "learned" to do better next time? "We have to figure out how to capture and systematically quantify information that is relatively free-form in such a way that the system can help us understand it and act on it."

There are some lucky companies for which Y2K has hardly been an issue. "I read these articles with great pleasure knowing that competitors are spending on these issues," says David Lord, CEO of Toysmart.com Inc., a Waltham, Mass., educational toy company. "It's another advantage we have."

Because Toysmart.com is a new company, it was designed from the start to be Y2K ready, so Lord can focus on other concerns. "We're not trying to do the retail thing online," he says. "We're looking to build a whole new business model. . . . The Internet will be integrated into your whole life, and we're trying to design ourselves to be in the middle of that."

As companies move beyond year 2000, they'll change, and so will IT. "Y2K forced a lot of IT people to get better at what they did," Shemwell says. "It has forced IT shops to become more like business."

And with CEOs taking an active interest in Y2K, senior managers are finally getting the exposure they have needed to understand the impact of technology, he says. That should raise IT's status in the company moving forward, even if there are major Y2K glitches that cost some CIOs, or even CEOs, their jobs. "There will be a real recognition that IT really does matter," Shemwell says, "so it's a win for IT regardless." ◗

Building a Better Service-Level Agreement

Service-level agreements can only improve user-IT communication if the motives and methods are right. Here's how one company got its SLAs off to a good start. By Deborah Radcliff

DAVE STOCK AND BARBARA KOWALSKI found that involving users and informing them about service-level agreements helped users understand the services IT must deliver at American Electric Power Co. in Columbus, Ohio

ANDY SNOW

SLAs in a Nutshell

Last year, Naomi Karten (www.nkarten.com) wrote a handbook called How to Establish Service Level Agreements. *In a nutshell, she suggests the following:*

- Don't create an SLA to squelch complaints.
- Work with customers to develop the SLA.
- Use outside help and resources.
- Don't rush.
- Track and review the completed agreement throughout the technology's lifetime.
- Rewrite obsolete SLAs.
- Write the SLAs in user-friendly language.

TWO YEARS AGO, Naomi Karten did consulting work for a bank. Her job: Figure out why its initial information technology service-level agreement (SLA) had been so ineffective.

The problem, she soon discovered, was one of disenfranchisement. To stem a rising tide of complaints about its service, IT had created the SLA but didn't involve the users. The IT department distributed a complex document, "terms and conditions for IT services and standards," then asked for feedback.

"When they sent the SLA for input to the business units, the customers didn't bother to respond," explains Karten, a former IT manager and now a consultant in Randolph, Mass. The technical language and lack of user input did in the bank's SLA before it was born.

The lesson? Bad motives beget bad SLAs. Unfortunately, Karten says, too many IT groups send out SLAs for the wrong reason, which is mainly to get users off their backs.

The only way to give better service is to find out what users need to conduct business. That means communication. Thus, the SLA is really becoming a foundation for relationship building, experts say.

"If done right . . . an SLA will open communication and clarify responsibilities," Karten says. "If the SLA is not done right, it can be more a problem than a benefit."

As computing networks grow more complex, the need for SLAs becomes critical. Yet, according to Compass America Inc., an IT consulting firm in Reston, Va., only 30% of 240 companies it examined over the past 18 months have formal SLAs in place.

"Before, the service-level agreement was an informal target for IT; but now they're being taken seriously. Now, instead of users getting agreements from IT, IT needs to get agreements from users," says Tom Kawamoto, senior consultant at Compass America.

In January 1998, American Electric Power Co. (AEP) in Columbus, Ohio, learned the value of bringing users into the process. At the time, the utility's IT department was reorganizing into "application support teams," with each team supporting each of the company's 18 business units. But the company needed to align these teams with each unit's specific business function. So they turned to the SLA.

First, both sides benchmarked existing service levels. "We needed to turn perception-based views to fact-based," says IT director Dave Stock. "Instead of 'the-mainframe-is-always-down' perception, we needed to establish the reality — 'the mainframe is up 99% of the time.' "

Then the business units selected "account managers" (users with some technical savvy) to represent the business side during SLA drafting and negotiations. The goal: Bring each party together to understand and measure the services IT was providing.

"The business units were very excited we set up this forum," Stock recalls. "Now, they can all get together, know each other and define expectations in a corroborative mode."

Stock's group also produces a newsletter that informs participants — in nontechnical language — of what services are being measured, what an SLA is, what it isn't and how it should be used. This, says Barbara Kowalski, AEP's manager of IT properties and benchmarks, helps all parties understand the process better.

Working on baseline service levels established earlier, the business units learned to negotiate better service for certain critical applications.

Thanks to this baseline, IT can more precisely calculate the costs when extra resources are required to raise the service level. Then IT can target exact chargeback costs to units requiring extra service. This is another new use for the SLA, explains Louis Gilden, technology consultant at Compass.

"There needs to be some kind of dialogue so the customers can understand what service levels they need, and what are the costs associated with those service levels," Gilden says.

Stock has long been preparing the business units for direct chargebacks for more IT service availability.

"The account managers know the fees are coming and they are anticipating this with some anxiety. That's why we're educating people so they have it in the forefront of their minds," Kowalski explains.

Since AEP began its reorganization, teams have defined 15 SLAs for six of the 18 business units. And those SLAs will always be examined and tweaked. That's because today's SLAs are living, breathing documents that change as users needs and technology change. They're not to be taken lightly, Karten says.

"As companies evolve, they'll need different service-level agreements," Gilden says. "The SLA is a moving target." ▸

Radcliff is a freelance writer in northern California.

web server
applications
database server
Are your
INTERNET APPLICATIONS
worth the risk?

When your web site was just a brochure, it didn't matter who hosted it. Now your web site contains sensitive company information, enables purchases and acts as a key communication channel. Can you afford to trust your site to just anyone?

You have other applications that are critical to your business. Ensuring security and reliability can be extremely costly, though not nearly as costly as if your site went down.

That's why you need NaviSite's customized business critical outsourcing solutions. As the most reliable, secure and cost effective solutions around today, we keep your applications up and running 24 hours a day, 7 days a week.

When it comes to your business critical applications, **Play it Safe with NaviSite**— a Leading Applications Service and Web Hosting Provider.

NaviSite

www.navisite.com

east coast 888.298.8222 • west coast 888.755.5525

- They are among the best and the brightest.
- Growing up, their favorite toy was the family computer.
- They began programming in Basic as kindergartners.
- Their self-taught technology skills helped them soar through school.
- They learned to speak Java as fluently as they speak English.

Now college students, they have their own Web sites, teach computer classes on campus, intern at prestigious firms and carry a full course load. They're a bright and energetic force in the information age. Call them the best of the

e-generation

BY JILL VITIELLO

RECENTLY, 186 OF THE world's top-gun college coders converged on Eindhoven, The Netherlands, for the Association for Computing Machinery (ACM) International Collegiate Programming Contest, sponsored by IBM. *Computerworld* talked to some of the students representing U.S. colleges to get a firsthand glimpse of life in the electronic generation.

Put aside any stereotypical notions of computer nerds or malicious hackers. These young men and women are smart, hard-working, talented and eager to strut their stuff on the information technology stage.

Hiring managers and technical recruiters, take note. The e-generation is IT's future. Meet four representatives of U.S. schools who impressed us:

Against All Odds

Janel Barfield, 26
Computer science major
Sam Houston State University
Huntsville, Texas

When she was 10, Barfield wanted to win the Nobel Prize in medicine. The summer between seventh and eighth grades, she borrowed her uncle's college textbooks and taught herself algebra. In junior high school, Barfield sailed through six math classes in three years.

But at 14, she underwent emergency surgery for pancreatic cancer, and the prognosis was grim. Confounding doctors, Barfield made a full recovery. Then, at 15, she became pregnant and gave birth to her son, Matthew. As a single, teen-age mom, Barfield continued to excel in school, maintaining a 4.0 grade-point average, serving as president of the Chemistry Club and treasurer of the French Club and tutoring younger students in mathematics.

At 17, she married her son's father. The couple has since added two daughters, Alyssa, 5, and Briana, 3.

As a college sophomore at Sam Houston, Barfield switched her major from chemistry to computer science because she could work on her home computer rather than in a laboratory on the Huntsville campus — a one-and-a-half hour drive from her home in Magnolia, Texas. "I don't mind the commute," she says. "It's the only time I'm ever alone."

Once she got comfortable with the syntax of programming languages, coding became second nature to Barfield. "I've fallen in love with Java," she says. "Programming languages grow. There's so many ways to use them and no end to the learning." She currently carries 13 credits and works 30 hours per week on campus with an application development team building a user interface for a project funded by a grant from the U.S. Department of Defense.

With her highly marketable skills, Barfield is tempted to quit school and take a lucrative full-time job. But

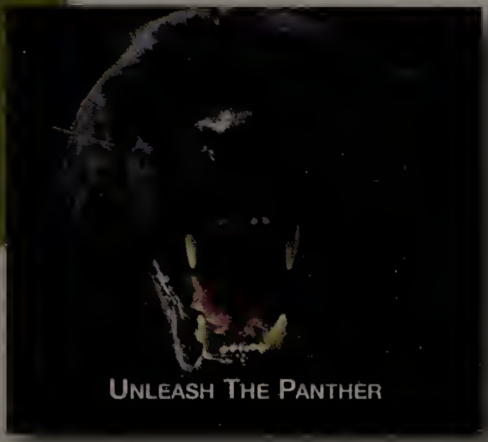
Continues on page 72

ANDREW YATES

"I'VE FALLEN IN LOVE WITH JAVA," says Janel Barfield, a 26-year-old mother of three and a computer science major at Sam Houston State University in Huntsville, Texas

96% of Prolifics' customers already meet their application development goals.*

MASTER THE
OPEN ENVIRONMENT



MEET YOUR APPLICATION
DEVELOPMENT GOALS

But that's not good enough! That's why we have unleashed the next-generation in our open application development suite of products called Panther.™

Panther gives you the power to quickly develop highly transactional applications, integrate with legacy systems, and take your applications to the Web with unparalleled open architecture. Our support of industry-standard component technologies, including COM, Corba, and even EJBs, gives you the flexibility to adapt our powerful technology to quickly respond to rapidly changing business needs.

Develop your apps faster with Panther's jump-start mechanisms and maximize the effectiveness of your development resources. Unleash the power and performance of Panther.

For your free software demo and white paper discussing Panther's integrated component development technology, log on to our website at www.prolifics.com/crequest or call 1-800-675-5419.

Prolifics
PANTHER™
Component Solutions Unleashed
www.prolifics.com/crequest

*1998 Gartner Group Customer Satisfaction and Brand Awareness Research, September, 1998 her motivation to earn a degree satisfies her intellectual bent —"Pursuing knowledge is like breathing," she says — and prepares her for a lifelong career instead of a job. Barfield hopes to land a co-op arrangement at IBM while she finishes school, and then to work in computing to support her husband while he earns his college degree. "In 10 years, she says, "I'll have enough financial and career independence that I won't have to answer anyone else but me. I will be able to choose the projects I want to work on..

"Having been faced with death at a young age, I know that every moment is precious and full of opportunity," Barfield says. "Life is a pretty cool thing."

To Boldly Go . . .

Stephan Roordan, 22
Computer science major
Rochester Institute of Technology
Rochester, N.Y.

Roordan grew up rooting for the New York Yankees, reading Isaac Asimov, watching *Star Trek* and *Star Wars*, and tinkering with computers. "I think it would be the greatest thing to write software for NASA to use with robots or in space colonies," he says.

Now in the last lap of a five-year computer science program at Rochester Institute of Technology, Roordan thought about pursuing a master's degree in software engineering. But with plenty of undergraduate courses in that subject, he says he has decided to "go to work and get some experience."

He's well on his way. Roordan has completed three internships at two companies. "It's an odd day when I'm not programming," he says. His favorite language is Java because of its ability to work across computing platforms and in Web applications.

When he graduates, Roordan hopes to land a job developing software applications for end users. Doing what? Doesn't matter. He's intrigued by everything.

"When people tell me what they do in their jobs, it all sounds interesting," Roordan says. "I just want to write programs to solve problems." After having the chance to work at a big company, he plans to start his own software company with college buddies. "I think you need about five to 10 years of work experience before you can be taken seriously," he says.

An avid intramural sportsman, Roordan plays soccer, volleyball and roller hockey. He admires Yankee great Lou Gehrig "for his work ethic." The first baseman played 2,130 consecutive games from 1925 to 1939, a record that held until Cal Ripkin Jr. broke it in 1995. "I want to be as hard a worker as [Gehrig] was," Roordan says.

He's already making significant progress in that direction. "Stephan is one of the most motivated and hardest working students I know," says Paul Tymann, an instructor at RIT and coach for the school's team in Eindhoven. "What makes him unique is his ability to communicate clearly and to work effectively as a member of a team. Given the size and complexity of the software that will be developed in the next century, the next generation of programmers needs the skills necessary to work effectively in a group environment and to communicate with the people for whom they are developing software."

SOON-TO-BE SOFTWARE DEVELOPER Stephan Roordan (top right) and online entrepreneur J. Nathaniel Sloan (bottom left) took part in the ACM International Collegiate Programming Contest with other top-gun IT students across the U.S.

And the Winner Is . . .

Students from the University of Waterloo, Ontario, won the 23rd ACM International Collegiate Programming Contest, held at the Technical University of Eindhoven in The Netherlands on April 11. They beat 62 teams to bring home the "World's Smartest Trophy." The winners answered six out of eight programming questions correctly with the fewest penalties.

First- and second-place teams were awarded IBM ThinkPads; the third-place team won IBM WorkPads and the top 10 teams, listed here, received ACM scholarships.

1. University of Waterloo (Ontario) 2. Albert-Ludwigs-Universtitaet Freiburg (Freiburg, Germany) 3. St. Petersburg IFMO (St. Petersburg, Russia) 4. Bucharest University (Bucharest, Romania) 5. Duke University (Durham, N.C.) 6. California Polytechnic State University (San Luis Obispo, Calif.) 7. University of California at Berkeley 8. Harvard University (Cambridge, Mass.) 9. St. Petersburg State University (St. Petersburg, Russia) 10. National Taiwan University (Taipei, Taiwan)

About the ACM Contest

The ACM International Collegiate Programming Contest is a programming competition for the world's universities and colleges. Sponsored by IBM, the annual event offers three levels of competition – local, regional and international.

This year, more than 6,000 students worldwide competed in preliminary rounds until the field was narrowed to 186 contestants in 62 three-member teams, representing schools in 21 countries. The contest was designed to highlight young, global programming talent and attract more students to the field of computer science. This year, contest participation increased by 50% over the previous year.

Regional competitions will begin in the fall for the 2000 ACM World Finals, to be held in Orlando next March.

MOREONLINE

For more information about the contest, visit these Web sites:
www.acm.org/contest
www.software.ibm.com/acm/

Future Entrepreneur

J. Nathaniel Sloan, 21
Computer science major
Harvey Mudd College
Claremont, Calif.

When he was 4 years old, Sloan's family bought a Texas Instruments Inc. computer. "I sat down with the manual and started typing, just to see what I could make happen," Sloan recalls. By the age of 8, he was programming in Basic.

Now Sloan programs in Java and C++ and finds it fairly easy to learn new languages. "Once you internalize how programming works, the individual syntaxes come naturally," he says.

By March of his senior year in high school, Sloan had accepted a job at Trilogy Software in Austin, Texas. He began this spring as a programmer, but that's just the first step for Sloan. "I think I'm more of a businessman than a computer programmer," he says. "Programming is enjoyable to me, but I don't want to limit my options."

Eventually, Sloan plans to earn a master's in business administration and build a multibillion-dollar company from scratch. He's already got a jump start: Sloan and three classmates founded Pragma Vision, a company that began as a class project in a software development course they took in 1997.

"We decided to create an electronic-commerce product that would make it easier to put catalogs on the Web," Sloan says. The students worked with an established entrepreneur to help him sell boots online. "The arrangement was mutually beneficial," Sloan says. "We got feedback, and he got an online store."

From Ph.D. to CEO

Vu Pham, 20
Computer science and economics major
Georgia Institute of Technology
Atlanta

Pham's parents came to the U.S. from Vietnam in 1975. Four years later, Pham was born. When he was 6 years old, his dad, now an IBM executive, brought home a computer. The youngster quickly taught himself Basic.

"Growing up, it was a hobby of mine to program little games for myself to play," Pham says. Programming taught him how to think logically, which helped in high school, where Pham participated in — and won — programming and math competitions.

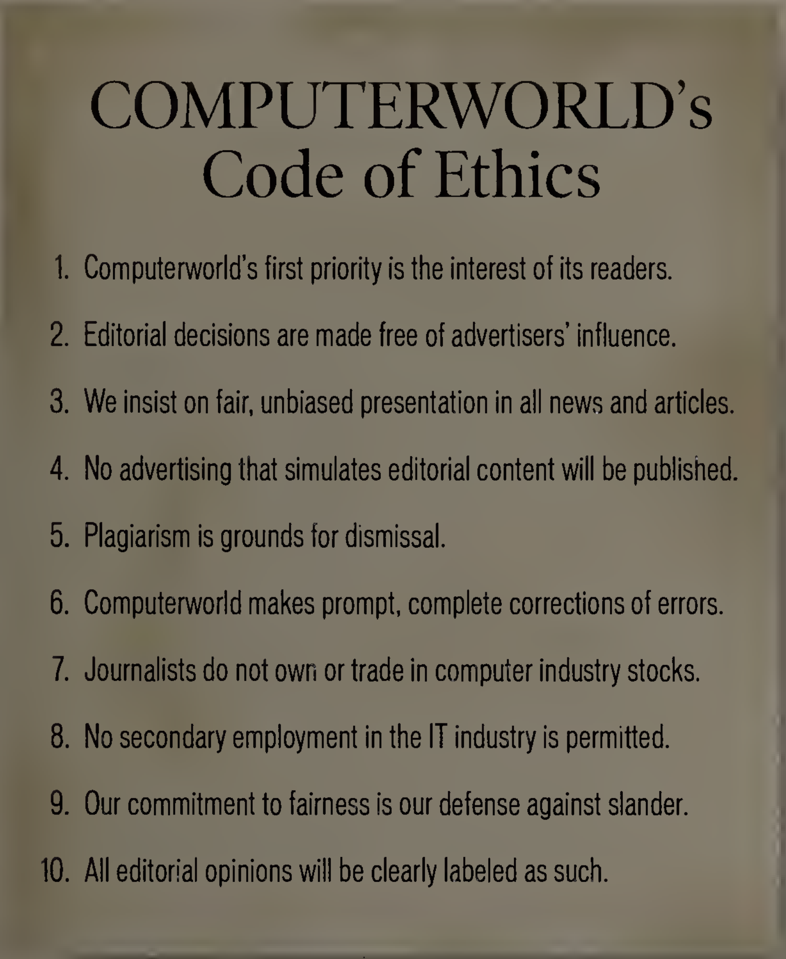
Pham entered Georgia Institute of Technology with enough advanced placement credit hours in calculus, physics and government to allow him to graduate early. Now he's considering graduate school to become a computer science professor.

As an undergraduate, Pham taught two introductory Java classes in the computer science department and worked as the head teaching assistant, hiring and supervising other teaching assistants. Pham has taught lecture halls filled with hundreds of students and small recitation classes where he got to know the individuals. "I don't want to be a boring professor," Pham says. "I always have jokes prepared that relate to the content of the day's lecture."

Pham says it's fun to work with students and see "when the light bulb pops up over their heads." But he isn't content to stay in the academic ivory tower for his entire career. During the summers, he has worked at IBM as a programmer, using the Internet programming language HTML, Unix and Java on several Internet projects for telephone companies. He says his dream job is to be CEO of IBM.

"Vu Pham is a sizzlingly fast coder — I'd say Java flowed out of his fingers," says Kalyan Perumalla, a research scientist at Georgia Tech and the mentor for the school's team in Eindhoven. "During my coaching, I observed that he has a way of finding alternative solutions to computing problems. I think Vu has great potential to be one of the next generation of super coders." ◗

Vitiello is a freelance writer in East Brunswick, N.J.



COMPUTERWORLD's Code of Ethics

1. Computerworld's first priority is the interest of its readers.
2. Editorial decisions are made free of advertisers' influence.
3. We insist on fair, unbiased presentation in all news and articles.
4. No advertising that simulates editorial content will be published.
5. Plagiarism is grounds for dismissal.
6. Computerworld makes prompt, complete corrections of errors.
7. Journalists do not own or trade in computer industry stocks.
8. No secondary employment in the IT industry is permitted.
9. Our commitment to fairness is our defense against slander.
10. All editorial opinions will be clearly labeled as such.

NOTEBOOK EXTREMES
Hefty or thin, the choice is yours. Key battles in notebook market are happening at opposite ends of spectrum. Page 81

THAT'S THE WAY IT WAS
How technology helped newsman Walter Cronkite predict a landslide in the 1952 presidential election. Page 86

COMPUTERWORLD
THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

Y2K MAY STALL WINDOWS 2000

Analysts pessimistic; many expect mid-2000 shipment for Microsoft operating system

BY SHARON GAUDIN

A growing number of analysts are warning users not to expect delivery of Windows 2000 before the middle of next year.

That's at least six months after the delivery date pinpointed last week by Ed Muth, Microsoft Corp.'s group product manager for Windows NT. And the delivery date Muth targeted in his statement — which came on the heels of a confirmed one-month delay in the release of the third beta of the updated operating system — is later than what Microsoft had predicted. In a statement last year, it pegged mid-1999 for the final release of Windows 2000.

Aside from any Microsoft issues, the major culprit behind analysts' prediction of a delay is the year 2000 problem and related system freezes that are expected to go into effect in the second and third quarters at many user companies.

"Based on Microsoft's history and the events coming up this year, like Y2K, I don't see them coming out *Windows 2000, page 16*

JUST THE FACTS
Ripple Effect
Applications that could be affected by a Windows 2000 delay
- Office 2000
- The BackOffice suite, including updates for
  - SQL Server
  - Exchange Server
  - BackOffice Server

PORTALS LINK BUYERS, SELLERS

Web marketplaces cut costs, speed purchasing

BY CAROL SLIWA AND SHARON MACHLIS

Got cows?

Business users can now buy everything, be it cows, chemicals, electronic parts or paper, through Web portals designed to help them find goods and compare suppliers' prices in specific vertical industries.

Users say this emerging business-to-business purchase process will make transactions faster, simpler and potentially more cost effective.

Take electronics components. Robert Child, director of corporate purchasing at FFTC Corp., an 1,800-employee electronics maker in Denver, said it might take two or three days and 10 or 20 calls just to locate *Portals, page 16*

CHRIS [illegible], a deputy CIO for the city of Indianapolis, says you need to be a tough bargainer and fight for continuous improvement

NO PANACEA

Farming out the headaches of the help desk to a contractor is a fast-growing trend — and it seems like such a great idea. But as national correspondent Julia King reports, CIOs are learning that a bad outsourcing deal just creates an endless loop of finger-pointing and frustrated users who can't get their technical problems solved. The upshot: Some companies are dumping their outsourcer for poor performance, bringing the help desk back in-house or renegotiating the contract to get service-level agreements.

As one analyst put it, "Broken help desk processes and problems aren't going to be magically fixed by outsourcing." *See page 24.*

HELP DESK OUTSOURCING

COMPAQ NEEDS ENTERPRISE VISION

Hurdles: User retention, product integration

BY JAIKUMAR VIJAYAN AND APRIL JACOBS

It has talked the talk. But can it walk the walk?

One year after stunning the industry with its bid to buy Digital Equipment Corp. — and seven months after the deal went through — Compaq Computer Corp. has made great strides in its bid to be perceived as an enterprise player. But that hasn't meant security for the company's enterprise users.

Compaq has promised users that it will make OpenVMS, Alpha and Digital Unix its high-end platforms of choice. But the Wintel-centric company — which purchased Digital primarily for its service capabilities — has yet to explain how it plans to do that while integrating its now broad family of technologies into a long-term enterprise strategy. *Compaq, page 103*

COMPAQ CEO Eckhard Pfeiffer could be in trouble, analysts say, if product revenue slows down. Quarterly results are expected this week

NEWSPAPER

WORDS WE LIVE BY.

When you pick up a copy of *Computerworld*, you know you're getting the most objective, unbiased news and information in IT. Our code of ethics guarantees it.

Why do we make such a big deal out of editorial integrity?

Because the words you read in *Computerworld* often have a dramatic impact on your business, your career, and your future.

You use this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get the edge on your competition.

In short, *Computerworld* is filled with the words IT professionals like you live by.

WORDS YOU WORK BY.

Week in and week out, our editors and reporters call it the way they see it – on issues ranging from network management to reengineering. They dig deeply to bring you the most accurate, comprehensive news in IT.

It's no wonder over 205,707* IT professionals subscribe to *Computerworld*. Shouldn't you? Order today and you'll receive 51 information-packed issues. Call us toll-free at **1-800-343-6474,** or visit us on the World Wide Web at http://www.computerworld.com.

You'll get the kind of straightforward, impartial reporting you can work by. You have our word on it.

COMPUTERWORLD
The Newspaper for IT Leaders

*Publisher's own data as of 1/11/99.

JOE AUER/DRIVING THE DEAL

Surviving a 'hell or high water' lease

KNOW WHAT doesn't cut it anymore? A purely technical solution at a great price. These days, flexibility is becoming more important — so much so that it should be a major consideration in our evaluation formulas. As an example, look what just happened in this deal: A major food company implemented a very successful sales force automation project. The company deployed sophisticated sales management software, e-mail and a set of standard desktop tools (word processor, spreadsheet, calendar and so on) on laptops for 400 staffers across the U.S.

Understandably, the customer didn't want to purchase hardware that would quickly become obsolete, so the IT team did a purchase vs. lease analysis and concluded that a two-year lease offered the best economic advantage. The lease alternative was also examined from a technological change perspective; even with the obsolescence, everyone was comfortable with the two-year term. A two-year lease seemed perfect.

Because of everyone's high degree of confidence, a noncancelable two-year lease term was negotiated, because it had the best lease rates. (Minimizing costs was an objective for the company.) Before signing the lease, both the IT organization and business management were advised that they were trading termination flexibility to get the lowest possible cost. The company was entering into a hell-or-high-water lease, with no early out. Everyone understood and agreed.

Oops! Less than a year into the lease, the sales force automation software was performing poorly. The cause? The application design was overwhelming the hardware — both memory and hard drive capacity. The sales force had embraced the application software and was using it far more than anyone had expected. The only solution was a hardware upgrade at the next annual sales meeting — the one time when the entire sales force gathered in one place.

The IT department considered memory upgrades and a hard drive swap, but it eliminated that option because of the time required and risks associated with such a project. The sales meeting lasted three days — 400 laptops couldn't be upgraded in that amount of time. IT concluded that completely replacing the laptops with new ones was the best way to solve the memory and hard drive limitations given the time constraints. In fact, the purchase price was cheaper than the laptops leased less than a year ago. However, there was a "gotcha": the noncancelable lease.

The lessor's first solution was to add the current lease's unamortized balance of $600,000 into the lease for the new laptops. That was unacceptable to the customer because it generated lease payments that exceeded the project's budget.

The food company's IT team was in a dilemma: how to negotiate its way out of a deal with the lessor when it had no leverage and on terms and conditions it previously agreed to in a contract. Even changing lessors wouldn't avoid the obligation remaining on the old lease.

The solution? The customer turned around the infamous supplier's ploy, "We're partners." The tactic was to suggest to the lessor that it should view the entire relationship as a partnership. Strictly interpreting the lease and demanding full payment would weaken the partnership. Additionally, the customers would be returning equipment still actively traded in the used computer market at a price higher than the residual value accounted for in the lease. Therefore, in the spirit of the partnership and because the equipment could be remarketed, the lessor should mitigate.

It worked. In the end, the lessor offered a significant concession on the unpaid lease balance. The customer offered to continue the "partnership" by agreeing to a new two-year lease. In return, the lessor significantly reduced the remaining unpaid balance on the old lease.

Even though it escaped through some creative maneuvering, the food company's procurement and IT people learned a valuable lesson: The lowest price isn't always the lowest cost. Paying for flexibility, like early termination or upgrade provisions, is often more advantageous than saving some dollars at the expense of hell-or-high-water rigidity. ◗

JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com.

WORKSTYLES

What It's Like to Work at . . . Carlson Cos.

Interviewee: Dave Zitur, vice president of information technology

Company: Carlson Cos. (*www.carlson.com*), a travel, hospitality and marketing firm.

Main location: Minneapolis

Number of IT employees: 1,000 in Minneapolis; 2,000 worldwide.

Number of employees (end users): 5,000 in Minneapolis; 160,000 worldwide.

Dress code: In IT, business casual: No jeans, shorts or T-shirts.

Typical workday: From 7:30 or 8 a.m. to 5 or 5:30 p.m.

Kind of offices: "Carlson has just invested a great deal of money in the Carlson Technology Center, a space we built out. It's modern, state-of-the-art and wired with high-speed connections. We have two-story atriums where we've put park benches; we have a workout room; and we have our own cafeteria, called the Megabyte. It's a very open atmosphere – 3.5- to 4.5-ft.-high cube walls, all with closets and cabinets and whiteboards. All the cubes are the same size. Directors and above are in offices."

How's the Megabyte? "It serves sandwiches, soups, coffee, donuts, rolls, bagels, Cokes, waters, fruit. The larger cafeteria, The Marketplace, is full-service."

Rating (scale of 1 to 10, with 10 the best): 7 for each

Who championed the Technology Center? "It was really the CEO's doing – Marilyn Carlson Nelson. She's our CTF – chief technology fan – and her commitment is to create an environment where we can attract the best folks."

On-site day care? Will open this fall.

Free refreshments: In meetings only.

Computers: Developers' workstations are NT-type machines; the standard machine is a Compaq.

What kinds of screen savers and mouse pads do people have? "A lot of people here are biking fans, so you see a lot of Harley Davidson mouse pads. Also golfing. We allow some flexibility, but we maintain some controls."

Must people carry beepers? Cell phones? "Yes. Some people have them because they're part of a rotation; others have them just because they need to be reachable."

Percentage of staff that telecommutes on a given day: About 5%.

The one thing everyone complains about: "The number of restrooms – we probably need more. Also, we don't have covered parking at this building, and in Minnesota in winter, that's a big deal."

Where the office gossips: "You always have those social butterflies – the leaders – so around their cubes. Also in the conference rooms and around the windows."

Favorite item in the vending machines: Diet Coke

Cost: 55 cents for a can; $1 for a bottle

Little perks: "A lot of that is up to the managers to award employees for a job above and beyond. They give out T-shirts, TGI Fridays [a Carlson chain] gift certificates, maybe a weekend at the Radisson [another Carlson chain]."

Next department perk: "We're about to have a departmental picnic. It will be on a workday, at a local park, and we'll have a barbeque-type lunch and activities like volleyball and softball. Once a year, in August or September, Carlson rents out an amusement park for a day on a weekend, and people bring their families."

Would employees feel comfortable e-mailing the CEO? "Yeah. I can speak for myself – I have no problem doing that."

Quote: "It's very, very fast-paced here. The travel, hospitality and marketing business changes and changes, and the technology has to keep pace, and it is exciting and fun. The really great thing is the support of our CEO. Our slogan is 'A great place for great people to work,' and she really has it as a goal for this to be a top place to work, and she is making the investments."

– Leslie Goff

©1999 ADPAC. All company/product names are property of their respective trademark owners. The IBM logo is a registered trademark and the IBM Business Partner emblem is a trademark of International Business Machines Corporation and are used under license.
The law firm pictured is purely fictional, and any resemblance in name to actual firms is purely coincidental.

HARRIS, SEVERS,
KRUEGER,
PORTER & REED
ATTORNEYS AT LAW

You'll be hearing from them on January 3, 2000.

If your Y2K remediation is complete, congratulations are in order. But there are still questions, especially in case of a lawsuit: has the work been independently verified? Can you prove due diligence? Have you made contingency plans for Y2K emergencies? Have you got business continuity plans in place? ADPAC has the tools and the training to make the answer to all those questions "yes".

ADPAC SVReview is the automated COBOL tool that verifies Y2K changes, regardless of the methodology or vendor used. It provides the independent reports and audit trails that will support due diligence – critical information that companies will need in defending themselves against potential litigation. SVReview also helps you guard against recorruption of remediated code, whether it occurs as a result of routine maintenance, reengineering, or the introduction of new code that's not Y2K compliant.

ADPAC SWAT (System Wide Analysis Team) Training is an intensive, 5 day course that prepares your rapid response team to deal with Y2K emergencies that can cause crashes, inaccurate data, business slowdowns, and more.

You'll find ADPAC tools on IBM and compatible mainframes in many of the world's largest corporations, utilities, university computer systems, and critical government mainframes. Find out more from ADPAC, or from one of our Consulting Partners, including Platinum technology, Renaissance Worldwide, Intertec Communications, The Trotter Group, TranSys, and MTS People's Source. SVReview is one of the ADPAC SystemVision family of tools.

TOOLS FOR THE 21ST CENTURY
Maintain the legacy.
Master the future.

IBM Business Partner

ADPAC
THE SCIENCE AND ART OF PROGRAMMING

www.adpac.com
800-797-8439

NT BACKUP & DISASTER RECOVERY

NOW FROM
VERITAS

A SPOONFUL
A DAY

Cool Cactus
Flavor
Antacid

VS.

Backup Exec
For Windows NT
The Only 100% Compatible Windows NT Backup Solution Chosen by Microsoft Offering Unmatched Performance and Reliability
Version
7

PREVENTATIVE
MEDICINE

When it comes to absolute cross-platform data protection, turn to the relief nine out of 10 network managers prefer: Backup Exec for Windows NT. Not only is it 100% Microsoft compatible, this latest release features enhanced Exchange/SQL server agents including individual mailbox and table protection. Proven. Reliable. Stress now comes with an antidote, Backup Exec 7.2.

1-800-729-7894 ext. 81518

www.veritas.com

Backup Exec

1998 VERITAS Software Corporation. VERITAS, Backup Exec and the VERITAS logo are trademarks of VERITAS Software Corporation. Outside [illegible] the US and Canada ca [illegible]

TECHNOLOGY

PLANNING FOR MERCED

With Merced, its first 64-bit chip, Intel will pile into the brutally competitive high-end server business. IT can expect lower prices in the long run, but performance boosts will be nonexistent for today's applications. ▸ **82**

TAMING WINDOWS NT

As Microsoft tweaks and changes the way administrators deploy and manage it, corporate users say Windows NT is not the management beast it used to be. ▸ **79**

TUNING 3COM NETS

New switch modules from 3Com will let IT managers assign quality and priority levels on Ethernet networks and ATM backbones. The bad news: The modules work only with 3Com hardware. ▸ **84**

FIELD REPORT: JAVA TOOLS

Visual Café and Power J make it easier for developers to smooth Web-to-database connections. ▸ **106**

OUTSOURCING SECURITY

Would you give responsibility for your network security to an outside vendor? One Emerging Company thinks you should. ▸ **81**

Y2K SILVER LINING

Y2K is forcing IT to do long-overdue inventories on PC hardware and software. A nice spin-off: Asset tracking tools such as those from Tangram promise to help PC management long after Y2K. ▸ **83**

OUTSIDE INTEGRATION

Application integration tools that tie together internal systems are catching on like crazy. But some users are already looking to do automated business-to-business integration — and vendors are responding. ▸ **84**

MICROSOFT BOOSTS XML

Although most corporate developers are still just pondering the power of Extensible Markup Language (XML), Microsoft customers say it's providing the tools and direction they need to spur XML's use for a variety of tasks. ▸ **78**

MANAGING DOCS ON THE WEB

Combining document management with the Web creates an enterprise knowledge portal — or so vendors such as Documentum hope. ▸ **85**

MORE

Exec Tech 88
Flashback 110
Hardware 84
Networks 82
Software 78

TAMARA REYNOLDS

AUTOZONE'S DOYLE SANDERS brought 773G bytes of data to IBM to test how well a new DB2 feature ran on an RS/6000 SP2

CUSTOMERS PUSH THE LIMITS

What if 300 concurrent users tried to access your new merchandise planning system? What if you tried to run a query involving 17 table joins and a 935-million-row table? Those are the types of questions customers bring to IBM's four Teraplex Integration Centers, where they can stress-test systems in a nonproduction environment.

81

BRIEFS

IT Decision Support

Gaithersburg, Md.-based NetBalance Inc. last week introduced CIO Portal, a Web-based, decision-support application for information technology managers.

The software uses Java-based agents to integrate data from inventory, network and systems management, ERP, help desk and infrastructure resource management systems. The product is set to ship in the third quarter.

Prices start at $150,000.
www.netbalance.com

Damgaard to Upgrade Axapta Business Tools

Damgaard A/S, a Copenhagen-based business application vendor with U.S. offices in Atlanta, last week said it's upgrading its Axapta software for small and midsize manufacturers. Version 2.0 adds new project tracking and warehouse management modules, plus support for three-tier setups. The software is scheduled to ship mid-July.

Pricing starts at about $150,000.
www.damgaard.com

Broadbase CRM Suite

Broadbase Information Systems Inc. is shipping Broadbase EPM 3.0, a suite of Web-based analytic applications for customer relationship management (CRM). The suite integrates data from e-commerce, front- and back-office applications, data warehouses and external sources, the Menlo Park, Calif., company said.

Module prices start at $150,000 each.
www.broadbase.com

Customer-Service Tools Upgrade

Right Now Technologies Inc. in Bozeman, Mont., is shipping Right Now Web 2.5, an upgrade of its Web-based customer-service software that lets users respond to queries with automated responses. The new version also lets customers attach files up to 1M byte.

A two-year license for the upgrade costs $15,000. Pricing for a hosted version is $350 to $700 per month.
www.rightnowtech.com

Microsoft Backs XML As Standard Language

Big-name endorsement likely to coax users to adopt data description format

BY DAVID ORENSTEIN

ALTHOUGH MOST corporate developers are still just pondering the power of Extensible Markup Language (XML), some Microsoft Corp. customers said the vendor is providing the tools and direction they need to spur XML's use for a variety of tasks.

Microsoft is building support for XML into its development tools for the sweeping role it envisions for the language. XML allows developers to describe data within a Web page or text message with tags similar to those found in the Internet programming language HTML (see chart at right). A key difference, however, is that XML lets users define their own tags to describe their data.

'The New ASCII'

At Microsoft's TechEd '99 conference in Dallas last month, the company touted XML as a format that will be common to virtually all Internet applications, making it the future standard of data exchange and application integration. Many developers quickly latched on to a recurring description of XML at the conference as "the new ASCII." Although XML use is still scant among developers, sessions on XML drew standing-room-only crowds.

Other Players

Microsoft isn't the fastest vendor to market with XML technologies — other companies such as Bluestone Software Inc. already provide an XML server, and ArborText Inc. already provides an XML editor.

But Microsoft's tremendous influence over millions of developers will spur much of XML's rapid growth, said Martin Marshall, an analyst at Zona Research Inc. in Foster City, Calif. With some XML standards unfinished, no vendor can provide complete XML support, Marshall said, but Microsoft will provide a comprehensive set of XML tools, "just in the same way that Visual Studio is a pretty good set of tools."

Even before XML is thoroughly integrated into Visual Studio, Philip Morris Inc. plans to jump into XML, said Ken P. Forster, a staff engineer at the Richmond, Va., tobacco and foods giant. "There is nothing to stand in the way of us using it now," Forster said. "I don't have to wait for wizards."

Custom Tagging

Philip Morris is looking to XML to enable the myriad embedded devices on its manufacturing plant floors to describe themselves and their data to applications in a standard way. Because XML allows users to define their own tags and is based on simple text, XML could embrace the different devices.

With such a system established, Forster said, the data streaming from the devices, once formatted with XML, could be routed to different applications by Microsoft's BizTalk server, scheduled for beta testing this fall. The data could be understood by Windows applications by using Microsoft's COM XML parser.

At Qualcomm Inc. in San Diego, developers of a wireless communications system that monitors freight trucks are looking at XML as a way to connect distributed application components, said applications engineer Vik Yashpal. Messages with XML-tagged data — and simple logic commands — could be carried by MSMQ, Microsoft's message queuing technology, Yashpal said.

Although users agreed with Microsoft that XML will likely become pervasive, some cited near-term obstacles. Using XML requires writing schemas that define rules for XML documents. And efforts to design industrywide schema are only now getting under way.

Wilson K. Gibbins, a staff Web technology consultant at General Mills Inc. in Golden Valley, Minn., said enterprisewide software upgrades would be needed.

Citing a common concern among users, he noted that his company has recently standardized on the Internet Explorer 4 browser. Upgrading to Internet Explorer 5, which features XML support, could be years away, he said. ▶

Microsoft and XML

Microsoft has been producing tools and technologies to enable developers to begin working with XML.

Internet Explorer 5: A browser capable of understanding and presenting XML to end users.

COM XML parser: Enables components and applications written with any COM development tool to extract data or logic from XML documents and messages.

BizTalk server: Due for beta testing this fall, will translate rate XML-defined data to applications and map XML schemas to one another.

Active Data Objects (ADO): Use XML to transmit data over Internet protocols.

MSMQ: Messaging middleware can shuttle XML between applications.

PeopleSoft Speeds ERP Installations, Upgrades

Rollout includes knowledge management package for project teams

BY CRAIG STEDMAN

PeopleSoft Inc. last month announced software tools aimed at speeding up installations and upgrades of its ERP applications.

And more is on the way this month: The Pleasanton, Calif., vendor said it plans soon to expand its lineup of end-user training programs with new knowledge management software.

The recent rollout also included a knowledge management package aimed at project teams that are installing PeopleSoft's enterprise resource planning (ERP) system.

The Advantage ToolKit includes a job-based guide to rolling out the software and setting up business processes and workflow procedures, PeopleSoft said. The tool, which has been in beta testing since last fall, is available free of charge to users who are working with one of 14 implementation consulting firms.

PeopleSoft also has announced a new rapid-deployment methodology — called PeopleSoft Express and sold through its services organization — that was designed to help users get its core ERP applications up and running in six months or less. ▶

Device Drivers Make Windows NT More Stable

Microsoft-certified hardware and memory management help prevent crashes, reboots

BY SHARON GAUDIN

Some corporate IT administrators are finding that a mix of well-debugged device drivers, Microsoft-certified hardware and better memory management tools is putting most of their NT management nightmares to bed.

Microsoft Corp.'s Windows NT server operating system has been known as much for its crashes and hunger for reboots as for its functionality. And that's been one of the problems that has kept NT from being a major player in enterprisewide, critical applications. But NT seems to be outgrowing some of those problems [CW, May 3].

Users say the secret is better deployment and management practices and new tools and fixes from Microsoft.

"You're not going to believe this, but since we deployed Service Pack 4, we've had an uptime, with no blue screens [system crashes] at all, of 99.8%," said Dick Claing, LAN administrator at jet engine maker Pratt & Whitney Aircraft in East Hartford, Conn. "We basically don't reboot our NT servers anymore. We always had to reboot each one once a week as part of normal maintenance. Now, going through our event logs is unbelievable."

Thread fixes

Claing credited threading fixes Microsoft added to Service Pack 4.0 for Windows NT 4.0. A thread is a specific function or series of functions carried out by an operating system. Once threads finish their work, they should release their claims to system resources such as memory. If they don't, the system may crash.

"We would reboot all the time, because threads would establish themselves and then never die," Claing explained. "The only way to destroy them was to reboot the machine. The threads would be up and nothing would be running on them. Now we monitor them but can pretty much leave those things alone."

Corporate users, analysts and Microsoft itself started looking at the fact that some users were extremely successful running NT, showing little downtime, while others running the same version were besieged with system crashes.

Microsoft Priorities

Fixing threading problems is one of the things Microsoft has been focused on, according to Michel Gambier, Microsoft's lead product manager for Windows NT server reliability and scalability. Gambier also said Microsoft has focused on fixing memory leaks, certifying device drivers and hardware and adding an event log that will track crashes and downtime. Most of those fixes were part of Service Pack 4.0, and other improvements are being added to the upcoming Windows 2000 upgrade.

But Gambier also noted that much of NT's reliability lies with the way it is deployed and managed.

"There are people who are getting great results on NT servers and some who are not," Gambier said. "This is something we've really been taking a look at very seriously over the last 24 months."

He said keys to better performance include the following:

- Testing device drivers for bugs before deployment or, better yet, using Microsoft-certified drivers.
- Having highly-trained administrators deploy and maintain NT servers.
- Using only Microsoft-certified hardware.
- Using memory management fixes Microsoft added to Service Pack 4.0 for Windows NT 4.0.
- Using a device driver-verifier tool Microsoft is adding to the upcoming Windows 2000 platform.
- Using a new tool, Uptime, in Service Pack 4 that tracks crashes to help administrators troubleshoot problems.

Finding those keys has made a huge difference for one administrator at the federal agency that controls the flow of water and electricity to the Las Vegas area.

"I'm very selective of what kind of hardware I use," said Chuck Lennon, an electrical engineer at the Boulder City, Nevada-based U.S. Bureau of Reclamation.

Lennon said he has greatly improved his uptime by purchasing most of his hardware from Dell Computer Corp. to avoid timing problems he found among components in other vendors' equipment.

"Every manufacturer has interpreted the timing on the equipment a little differently," Lennon said. "Sometimes they don't get the timing quite right and then it has a fatal crash and goes to the blue screen of death."

Denis Darveau, senior network coordinator at the Kaiser Foundation Health Plan in Oakland, Calif., said device driver bugs have been a huge roadblock to his company's NT stability.

"Most blue screens are because of drivers," Darveau said. "You need to upgrade the drivers as you upgrade the [operating system]. And it helps to use the drivers that Microsoft has tested and added to its CDs." ◗

Reboot Problems and Solutions

Microsoft has added some features to address common problems:

Top problems that force reboots:

① Memory leaks in the software

② Improper memory allocation

③ Buggy device drivers

④ Poor-quality hardware

⑤ Untrained workers deploying the system

What Microsoft is doing to help:

① Added many **memory leak fixes** in Service Pack 4 for Windows NT 4.0

② Adding features in Windows 2000 that **will better tag memory** so that if it leaks, administrators can tell where the leak came from and fix the problem at the source

③ Made changes in Service Pack 4, such as adding a **Heap Manager,** to better allocate memory. More changes are expected in Service Pack 5 and Windows 2000

④ Added a tool in Windows 2000 that will **test device drivers** under simulated stress conditions

⑤ Added a tool in Service Pack 4 that **tracks downtime** (when the server went down and how long it stayed down)

⑥ **System File Protection.** NT 4.0 and previous versions allowed shared system files to be overwritten by application installations, affecting dynamic link libraries and executables. System File Protection, which will be part of Windows 2000, prevents the replacement of monitored system files.

⑦ **Pool Tagging.** In the NT 4.0 kernel, there is a pool of shared memory. Pool corruption can cause bugs. In Windows 2000 and Service Pack 4, Pool Tagging better allocates memory to special pools instead of one shared pool.

SOURCE: MICROSOFT CORP., REDMOND, WASH.

There's nothing worse than computers that keep bankers' hours so 18 of the top 20 banks put their money on Compaq
www.compaq.com/nonstopfacts

Tired of
putting out
one
fire
after another?

Bring all your IT services under control with *one* software.

The SAS® solution alerts you to problems before users sound the alarm. And gives you consistent control over your full range of IT services: computers, applications, networks...phones, fax systems... the Web, E-mail...data warehouses...*any* application that provides time-sensitive logs.

Minimize disasters, maximize IT effectiveness

Respond proactively, not reactively

Visit us at **www.sas.com/ITrescue** for a free **Guide to Panic-Free IT Services**

1999
SPECIAL OLYMPICS
WORLD GAMES
NORTH CAROLINA
Gold Sponsor

SAS Institute Inc.

www.sas.com/ITrescue E-mail: cw@sas.com 919.677.8200

In Canada phone 1 800 363 8397. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.
Copyright © 1999 by SAS Institute Inc. 19757

Users Can Test-Drive IBM Systems at Special Centers

Banks, insurers, retailers and others can test 'what-if' scenarios at four U.S. Teraplex Integration facilities

BY GARY H. ANTHES
POUGHKEEPSIE, N.Y.

IBM CALLS the four computer facilities Teraplex Integration Centers. Users might call them "what-if" centers. "What if we had 300 concurrent users on our new merchandise planning system?" wondered Sears, Roebuck and Co. "What if our data warehouse got bigger than 5T bytes?" a large West Coast bank wanted to know. "What if we tried to run a query involving 17 table joins and a 935-million-row table?" speculated Aetna U.S. Healthcare.

AutoZone Inc. wanted to know if a new feature in DB2 would significantly speed complex queries against a big database of sales history. The Memphis-based chain of 2,700 auto parts stores had neither the hardware capacity nor the internal expertise to conduct real-world tests.

AutoZone's business was growing 20% per year, and last year it added 700 stores through acquisition. Business users at the $3.2 billion company were demanding more direct access to sales history, more ad hoc query capability and better tools to mine details from a new point-of-sale system.

Stress Test

Those escalating demands faced AutoZone's new Unix-based IBM SP2, a scalable parallel system with 32 RS/6000 processors.

So AutoZone brought 773G bytes of data to IBM's RS/6000 Teraplex center here to stress-test the new DB2 software in an SP2 environment. "We had questions about configuration and capacity," said Doyle Sanders, director of data services at AutoZone. "We wanted an additional comfort level."

The new feature AutoZone wanted to try is called Automatic Summary Tables (AST). Introduced last October for DB2 Universal Database 5.2, AST was designed to speed queries by creating tables of frequently requested data aggregates, such as sales by product, store and month, automatically and on the fly.

AutoZone found AST a success; most queries ran 10 to 100 times faster with it.

IBM said it has invested some $63 million in its four Teraplex centers: one each for the RS/6000 and the System/390 here; one for the AS/400 in Rochester, Minn.; and one for the Netfinity in Raleigh, N.C. The centers, with a combined total of 25T bytes of online disks, let customers and business partners conduct scalability and stress tests on large "business intelligence" applications. "We try to break things, to push the limits," said Joseph M. Catucci, manager of the Teraplex centers.

IBM allows customers to use the centers free of charge and doesn't charge for the consulting time of IBM experts — so long as the work is likely to help the company improve its own products. Some customers are in and out in two weeks, Catucci said, while one has been using the AS/400 center for two years.

Easing Bottlenecks

No function is more important at Sears than merchandise planning, so when the company bought a new planning package last year, the purchase contract specified that the application be able to scale up to very high volumes in the Sears environment — an IBM SP2 system running Informix Corp. databases.

The merchandise planning package combines as many as 100 variables to forecast inventory turnover, sales and gross margin by product, location and time period.

Sears set up a test environment at the RS/6000 Teraplex center. After running some 14,000 tests, the retailer learned that the application could scale linearly to 300 users and 80 processors, according to Mark Bauer, senior project manager.

"We saw three possible bottlenecks: the operating system, the communications [software] in the application or the database," Bauer said. "The bottleneck at 300 users was a database problem in Informix, but we could tune our way around that."

TAMERA REYNOLDS

AUTOZONE BROUGHT 773G bytes of data to an IBM RS/6000 Teraplex center to stress-test the new DB2 software in an SP2 environment. "We had questions about configuration and capacity," said AutoZone's Doyle Sanders. "We wanted an additional comfort level."

The tuning, and the overall proof-of-concept, allowed Sears to bring up the complex application in just six months.

But equally important were the capacity planning tools that came out of the Teraplex work, Bauer said.

"I have all kinds of graphs and charts that I can use to predict user performance," he said, adding that he can now accurately predict how long it will take to run various kinds of queries given different numbers of processors and concurrent users.

Indeed, Bauer said this trek to the Teraplex center probably won't be his last.

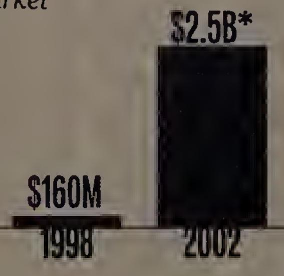
"I'd like to do this every year, and we'll have different goals each time," he said. During his next visit, he said he would like to expand merchandise plans from two dimensions — product and time period — to include a third dimension: store location. ▶

Compaqprovidedthefolksatdrugstore.comwith
apowerfulvaccineagainstathingcalleddowntime™
www.compaq.com/nonstopfacts
Drugstore.com is a trademark of Drugstore.com, Inc.

BRIEFS

NAS Growing Up

Entry- and workgroup-level network attached storage market



*Projected

SOURCE: GARTNER GROUP INC./DATAQUEST, STAMFORD, CONN

Compaq Cuts Deskpro PC Prices

Compaq Computer Corp. has announced that it has dropped prices on its Deskpro line of desktop PCs, with some Deskpro EN and EP series machines trimmed by as much as 14%.

Compaq said the retail price for a Deskpro EP with a 400-MHz Intel Corp. Celeron processor, 32M bytes of RAM, a 4.3G-byte hard drive and a 15-in. monitor is approximately $1,029.

www.compaq.com

MTI Takes Wraps Off RAID System

MTI Technology Corp. has introduced the Gladiator 2550, a cross-platform RAID storage system. The array offers support for Linux, Windows NT and NetWare.

It can house up to 655G bytes of data per controller and supports RAID Levels 0, 1, 0+1 and 5, according to the company in Anaheim, Calif.

Pricing starts at $16,069.

www.mti.com

Casio to Ship Multimedia Palmtop

Casio Computer Inc. has announced that next month it will begin shipping the Cassiopeia model E-105, a Windows CE-based, palm-size PC for multimedia applications. Based on a 131-MHz processor, the device features an LCD screen with 65,536 colors, according to the Dover, N.J., company.

The palm PC costs $599.

www.casio.com

Intel Faces Challenges In 64-bit Server Market

Analyst says entry in business isn't 'by any means a slam-dunk' for chip maker

BY JAIKUMAR VIJAYAN

INTEL CORP. MAY be almost unchallenged in its domination of the desktop. But users will find plenty of hardware choices when it comes to the 64-bit server market, which Intel will join with its forthcoming IA-64 architecture.

Ramping up their own processor architectures are traditional RISC vendors including IBM, Hewlett-Packard Co., Sun Microsystems Inc. and Compaq Computer Corp., all of which will have powerful new versions of their own chips by the time Merced — the first IA-64 chip — ships.

Low Cost in Long Term

Intel's entry in the high-end server business should give users lower-cost commodity server platforms in the long term, "but it is not by any means a slam-dunk for Intel," said Rich Partridge, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y. "Intel's potential is spurring on the other RISC vendors to give off their best," Partridge said.

IA-64 is a 64-bit chip architecture that Intel and HP have been developing since 1994. The architecture's main promise lies in its ability to run both Wintel and Unix applications equally well and at a lower cost than current proprietary architectures (see story at right).

IA-64 represents Intel's effort to break into the high-end server market, which is dominated by Unix vendors with proprietary hardware. Top players include Sun, with its Solaris operating system and UltraSPARC-based systems; HP, with its HP-UX and PA-RISC systems; Compaq/Digital Equipment Corp. with Alpha and Tru64 Unix; and IBM, with AIX running on its PowerPC-based servers.

With the first systems based on the chip about a year off, Intel and HP have intensified efforts to nudge software development activity around the architecture. Both companies, for instance, recently released detailed technical information to help independent software vendors optimize their applications for 64-bit server platforms [CW, May 31].

Most major software vendors have said they will offer IA-64 versions of their products.

IA-64 should be a formidable competitor in the server market, said Rob Young, a longtime Compaq/Digital Alpha user and a senior analyst at Ameristar Technologies Inc., a systems integrator in Philadelphia.

"Intel's backing assures that there will never be a parts availability issue or a futures issue and that there will be large volumes and the low prices that go with such volumes," Young said.

Shipping Plans

Vendor moves to compete with IA-64 include the following:

- Sun is set to ship its long-delayed 600-MHz UltraSPARC III this year. The chip could boost application performance 40% over current SPARC technologies, according to Sun.
- Compaq plans to ship the Alpha 21364 — considered by many to be IA-64's strongest technical challenger — in the first half of next year. In terms of raw performance at least, the 100 million-transistor, 1,000-MHz chip should be the performance leader.

But Compaq (like Digital before it) has had a hard time attracting new applications to the platform.

- HP plans at least two more versions of its PA-RISC architecture: PA-8600 and PA-8700. The former is set to ship in the second half of next year, with initial clock speed estimated at 560 MHz.

Such efforts mean it will take Intel at least three years to catch up with RISC vendors in price/performance, said Dean McCarron, an analyst at Mercury Research Inc. in Scottsdale. , Ariz. ◗

Merced's Rivals

VENDOR	CHIP	COMMENTS
Sun	UltraSPARC III	Expected out first half 2000. Initial speed of 600 MHz, 0.25 micron process, will eventually support up to 8M bytes of L2 cache.
Compaq	Alpha 21364	Out in first half 2000. Initial speed over 1 GHz, 0.18 micron process, on-chip network switches and memory controllers
HP	PA-8600/8700	Initial speeds around 560 MHz
IBM	Power3	Initial speeds in excess of 500 MHz; copper-based

Merced's advantage? Multitasking

If the world seems less than bowled over by Merced, there may be good reason. According to *Computerworld*'s technology analysis, servers based on the forthcoming chip will provide no performance boost without applications that take advantage of new features.

Intel Corp. confirmed that although virtually all existing Pentium-based applications and operating systems will run on Merced systems, performance for that software will be approximately the same as on a Pentium III.

And Hewlett-Packard Co. said applications written for its own PA-RISC-based servers will be executed on Merced using software emulation, though the company insisted performance will be comparable to native PA-RISC.

TECHNOLOGY ANALYSIS

Then what's Merced's advantage? In a word,multitasking.

Merced's IA-64 architecture includes eight times as many registers as a Pentium. That lets Merced quickly switch among tasks without having to save the register set's contents for one task to memory and reload the registers for another task – a time-consuming process known as "spill and fill."

The large register set and new parallel-execution features also allow much faster performance of complex floating-point calculations.

The result: For applications tuned to use the new features, Merced should dramatically improve performance. But for conventional Pentium-based applications, those extra registers will sit unused – and useless.

Other key Merced features include the following:

- DOS, NetWare and Windows 3.x, 9x and NT will run unmodified as long as the computer's firmware (BIOS or boot ROM) initially configures the CPU for Pentium compatibility.
- Microsoft said it will have a Merced-specific version of Windows NT ready when Merced-based servers ship next year.
- Hewlett-Packard HP-UX applications compiled for HP's PA-RISC CPU will run under software emulation only. Intel and HP claim performance is comparable to native PA-RISC.
- Other expected operating systems support includes Sun Solaris, Digital Unix and The Santa Cruz Operation Inc.'s Unix.

Intel claimed Merced will perform 6 gigaflops (one billion floating-point operations per second), about three times the speed of the current Pentium III floating-point performance, in IA-64 mode. When running Pentium-compatible applications, Intel said, performance will be equivalent to a Pentium III.

– Frank Hayes

Y2K Forces Inventory of Desktops

Will help IT better manage future upgrades

BY MATT HAMBLEN

One benefit of the costly year 2000 conversion is that companies are finally conducting an inventory of their desktop assets to find out what software and hardware fixes are necessary, users and analysts said.

Those inventories — which analysts have advised, and companies have ignored, for years — will help information technology departments better manage future PC software and hardware upgrades and repairs.

PC asset management is "catching on, probably because of Y2K," said analyst Norbert Kriebel at Giga Information Group Inc. in San Diego.

Y2K is why last November, Inland Paperboard and Packaging Inc. in Indianapolis installed asset-tracking software from Tangram Enterprise Solutions Inc. in Cary, N.C., to inventory 3,000 PCs. The software will automate the process of finding out which versions of applications and which features are on each machine, said Connie Berkowitz, PC analyst at Inland.

It's a Good Thing

Will the Y2K inventory help after Jan. 1, 2000? "Absolutely," Berkowitz said.

Whitney French, manager of IT at Duke Engineering & Services in Chicago, said upper management may not have approved Duke's Tangram purchase without the urgency of Y2K.

It takes a technician about 1.5 hours per PC to manually get data about software and hardware specifications; loading the Tangram client software once takes 10 minutes and then provides continual reporting through the network, French said. The Tangram system, which starts at $30 per node, paid for itself in about one month at Duke, which has 3,000 PCs in 47 offices worldwide.

Go With What Works

Tangram competes with large systems management companies such as Tivoli Systems Inc. in Austin, Texas, and Network Associates Inc. in Santa Clara, Calif., that package asset tracking with other tools. But Kriebel said Tangram has become the "de facto leader in its space" by sticking with the more limited area of asset tracking.

Meanwhile, updates continue to come out. Tangram just announced Version 3.0 of its Asset Insight software, featuring reporting enhancements.

And Dell Computer Corp. in Round Rock, Texas, just announced OpenManage IT Assistant, freeware set to ship this month that tracks and manages Dell systems in a network. ◗

Checking PC Assets

Features of Tangram's Asset Insight Version 3.0:

CHANGE INSPECTOR, a subsystem for reporting desktop changes to help negotiate service contracts and upgrades.

ENTERPRISE DAILY, an intranet newspaper that automatically generates articles on system trends in a company for distribution to its top management.

SERIAL NUMBER and e-mail discovery modules to allow ease in management.

BRIEFS

Hitachi Brightens Monitors

Hitachi NSA has released SuperScan 643, a 17-in. monitor that's 20% brighter than its predecessors. The product offers maximum resolution of 1,600 by 1,200 pixels at 75 MHz, according to the Westwood, Mass., company.

The monitor costs $449.

www.hitachidisplays.com

Sony, HP Push Rewritable DVD

Sony Corp. and Hewlett-Packard Co. last week said they will sell the world's first rewritable drives for digital versatile discs in the U.S. next month. The rollout is the latest move in a battle over future rewritable, high-capacity storage systems for PCs.

The companies plan to price the drives between $600 and $700.

Sony Adds Storage Systems

Sony Electronics Inc. has announced PCBacker 10000i and PCBacker 10000e, tape storage backup systems for workstations and networks.

Both use a single Sony DDS-4 (digital data storage) tape drive, which provides 40G bytes of compressed capacity and speeds up to 4.8M byte/sec., according to the San Jose company.

The 10000i, which is an internal model, costs $1,685; the 10000e, an external model, costs $1,855. Each comes bundled with Windows backup software from Computer Associates International Inc.

www.sony.com

360-Degree Image Camera

NEC Corp. has developed a high-resolution camera that can take 360-degree images for display on Web sites. The camera uses a high-speed, rotating mirror to take a series of pictures over an entire area and automatically synthesizes the pictures into a complete image. Resolution is 2,000 by 300 pixels. Pricing and availability weren't announced.

www.nec.com

ROBOT CLEANS UP CHERNOBYL

The lid that covers the worst nuclear disaster ever is busted. And the line of volunteers to go in and fix it is short.

Stepping into the breach, the U.S.-based Pioneer robotics team, which is composed of government, university and industry types, recently presented the robot pictured at left to the Ukraine, where the Chernobyl nuclear reactor failed in 1986.

The "sarcophagus" designed to enclose the site is failing. If it's not fixed, it'll probably collapse.

The robot uses a 3-D virtual reality map of the reactor building and sarcophagus, created using Silicon Graphics Inc. gear, to reveal cracks and other deterioration.

Some lucky stiff in a protected room near the reactor core will use an SGI workstation to "drive" the robot. ◗

— Robert L. Scheier

MSN.com™ runs all day every day and all night every night
systems managed and implemented by none other than Compaq
www.compaq.com/nonstopfacts
©1999 Compaq Computer Corporation. All rights reserved. MSN is a trademark of Microsoft Corporation.

Pilot Guides Corporate Nets' Security Needs

E-commerce security too big a job for companies to handle alone

BY ANN HARRISON

OUTSOURCING security isn't new; companies routinely contract for guard services. But protecting networks is different from hiring a night watchman.

In 1996, managers at VisionTek Inc., a Gurnee, Ill., manufacturer of computer memory modules, realized that a network manager could easily change settings on a proxy server to create a back door into the corporate systems. Also, its expanding Internet presence and e-commerce plans made the company vulnerable to denial-of-service attacks and the destruction of sensitive files.

John Kehoe, a VisionTek network consultant, said his prior job for the U.S. government made him distrust security outsourcing. "The last thing anyone would think of is [to] outsource firewall and security services. People would [be] livid at the suggestion," he said.

But $70,000 per year for a security manager plus hardware and software maintenance made outsourcing look better. The company checked out a few Internet service providers, but most offered only firewall management.

Useful Utilities

VisionTek's package came from Pilot Network Services Inc. in Alameda, Calif., which offers a wide array of security services, called "security utilities," designed to handle Internet-borne, corporate security threats. As with any utility, every customer gets the same product and enhancements. Pilot installs a router at each customer site and runs a dedicated T1 or T3 line to a regional network security center linked to other centers by a private Asynchronous Transfer Mode (ATM) backbone and with full redundancy. In Pilot's distributed architecture, security is embedded directly into the services themselves: high-security hosting/Internet connectivity; e-commerce hosting; an extranet/virtual private network (VPN) with encryption; authentication; access control; virus scanning; Web filtering; and hardened operating systems. Pilot also connects Internet-based VPNs to the company's existing frame-relay, wide-area network.

The services deny more than 50 million packets per month; Pilot employs around-the-clock monitoring teams to detect and sort malignant packets. Any attempted attack triggers an alarm that's reviewed immediately. Pilot's security engineers use its Heuristic Defense Infrastructure, which uses information from past attacks to rapidly create countermeasures and deploy them immediately to all subscribers. "The more clients we have, the stronger our layers of defense become," said Pilot CEO Marketta Silvera.

Whom Do You Trust?

Outsourcing a security operation to a third party requires a high degree of trust. Pilot is banking on its six-year track record, its heavy infrastructure investments — and the high cost of developing and maintaining an around-the-clock monitoring team. By providing security to many clients, Pilot is achieving economies of scale.

Firewalls, if not designed with redundant equipment and connections, provide a critical, single point of failure. Pilot equips its security centers with emergency Integrated Services Digital Network backup, a collection of telecommunications carriers and a secure backbone.

The centers are built to withstand natural and man-made disasters. Pilot has its services and defense strategies audited by outside evaluators at Trident Data Systems.

Many large companies have already turned their security systems over to Pilot. They include General Electric Co., the National Association of Securities Dealers Inc., the American Stock Exchange Inc., Twentieth Century Fox Film Corp., Lucent Technologies Inc., PeopleSoft Inc. and Hitachi America Ltd. As for VisionTek, Pilot now secures Internet traffic, provides workstation authorization and scours e-mail for viruses. A T1 connection routes Internet traffic through Pilot's Network Security Center in Chicago.

The company is now looking to consolidate its voice, video and data services on Pilot's ATM backbone crossover and secured network environment, which should be cheaper and more secure than its current frame-relay connection.

"We hired a security company and we got an [Internet service provider] and a security company with an extremely high level of service," Kehoe said. ◗

the buzz
STATE OF THE MARKET

What People Say About Pilot . . .

Experience & Service

VisionTek network consultant **John Kehoe** said few companies can match the security expertise of the defense and intelligence communities. But with **Jim Ransome** – who's served in both – as Pilot's director of security architecture and operations, Kehoe said he has "a high level of confidence in Pilot's ability to maintain a secure infrastructure and attract people to maintain that infrastructure." Kehoe also likes Pilot's responsiveness: "I called with a minor security issue at 2 a.m. and got a human being right away who could answer my question," he said.

Trust Them, He Says

"Their entire value proposition is based on the idea that you can trust them. If these people are no longer trustworthy, their company is worth zip – and they have their personal fortunes tied up in this," said **Eric Hemmendinger**, an analyst at Aberdeen Group Inc. in Boston.

Pilot Network Services Inc.

Supports secure e-commerce and corporate networks via security utilities with a range of subscriber services

Location: 1080 Marina Village Parkway, Alameda, Calif. 94501-7800

Telephone: (510) 433-7800

Web site: *www.pilot.net*

Niche: Companies that want to focus on their core business and can't match the level of security provided by a trusted third party to secure e-commerce interactions and enterprise networks.

Company officers:

- Marketta Silvera, founder, president and CEO.
- Bill C. Leetham, CFO, treasurer and senior vice president, finance and administration.

Milestones: Founded in 1993 and publicly traded (Nasdaq: PILT) in 1998. Last year, filed three patents for its Heuristic Defense Infrastructure, which combines a multilayered, distributed architecture and the expertise of security engineers to gather attack data and apply countermeasures. This year, General Electric Co. selected Pilot for its e-commerce infrastructure.

ROBERT HOLMGREN

CEO MARKETTA SILVERA is betting big on demand for network security services

Employees: 160 security engineers and other staff.

Profitability: Lost $18.1 million in fiscal '99 on revenue of $17.5 million. Revenue up from $11.3 million last year.

Burn money: From GE Capital (fall 1997) and Arthur Andersen & Co. (early 1998).

Products/pricing: Clients pay Pilot between $5,000 and $30,000 per month to outsource their corporate Internet access or Web commerce sites. The company also offers secure VPN services and Pilot Secure Telecommuting, which brings central and remote employees in on one secure, virtual network environment. Services include Pilot Traffic Profiles, a confidential monthly report of usage and attempted attacks.

Partners: Arthur Andersen, General Electric, Cisco Systems Inc. and Sun Microsystems Inc.

Potential Stumbling Blocks:

- Although revenue is up 55% over last year, Pilot has spent a bundle on a major global expansion, including a new security center in London. Net losses are larger than total revenue. Despite its current good cash position and venture capital backing, rapid expansion could cause growing pains.
- Limited brand name recognition among potential customers.
- Contracts limit liability and all parties are insured. But a major security breach could irreversibly damage credibility.
- Hiring and retaining top-notch security experts.

PCEXPO NEW YORK IS THE MOST INFLUENTIAL BUSINESS COMPUTING EVENT IN AMERICA

If you're not here, where are you?

For 17 years, PC*EXPO* has been the "don't miss" event for the serious IT professional; in fact, 2/3 of last year's attendees didn't go to any other technology event.

For real-world solutions to your business technology issues, come to PC*EXPO*.

We've got over 500 of the industry's leading vendors eager to introduce their solutions for your IT needs. More new product announcements are made at PC*EXPO* than any other business technology event in America.

Come face-to-face with thousands of information technology professionals.

Meet the major players like IBM, Compaq, 3Com, Novell and Microsoft, as well as innovative start-ups. PC*EXPO* provides an exceptional professional forum for you to make IT purchases, form strategic relationships, and network with your peers. Plus, you can get an insider's view on trends with our Keynote Speaker Series and over 50 seminars and tutorials.

Register now for PC*EXPO* New York, and save nearly 20%.

For a limited time, register for only $85, a savings of nearly 20% on the 3-day exhibit fee of $105. Just register on-line at www.pcexpo.com or call for a registration form before May 14, 1999. Only on-line registrations will be accepted after May 14 and the full fee will apply.

For an updated list of PC*EXPO* exhibitors visit www.pcexpo.com

---

Register now for PC*EXPO* at www.pcexpo.com

or call 1-800-829-3976 (ext. 2982); **International: 212-615-2982.**

PC*EXPO* NEW YORK
June 22-24, 1999
Jacob K. Javits Convention Center
New York, NY

PC*EXPO* ® is produced and managed by Miller Freeman, Inc. (www.mfi.com), a wholly owned subsidiary of United News and Media plc.
PC*EXPO* ® is a registered service mark of Miller Freeman, Inc. © 1999 Miller Freeman Group USA. All rights reserved.

Source Code: MS59

PERSONAL INFORMATION MANAGERS:

The Next Step

BY JOSEPH E. MAGLITTA

With many of us so focused on corporate information, it's easy to neglect the key personal information languishing on desktops right under our noses. But as the airlines remind us, first you need to put on your own oxygen mask before helping others. The same might be said of information management.

Desktop personal information managers (PIM) began appearing in the early 1980s. Pioneering products such as Borland International Inc.'s Sidekick eventually became mainstream, but the public fancy then shifted to groupware, Web browsers and personal digital assistants (PDA).

Ironically, the latter has helped reignite interest in effectively managing key personal information — including contacts, scheduling, documents, data and Web resources — for mobile and office users.

A new breed of software products promises to recapture that earlier excitement by offering clever, useful complements for Microsoft Corp.'s Outlook and Lotus Development Corp.'s Notes, which have dominated corporate desktops in recent years.

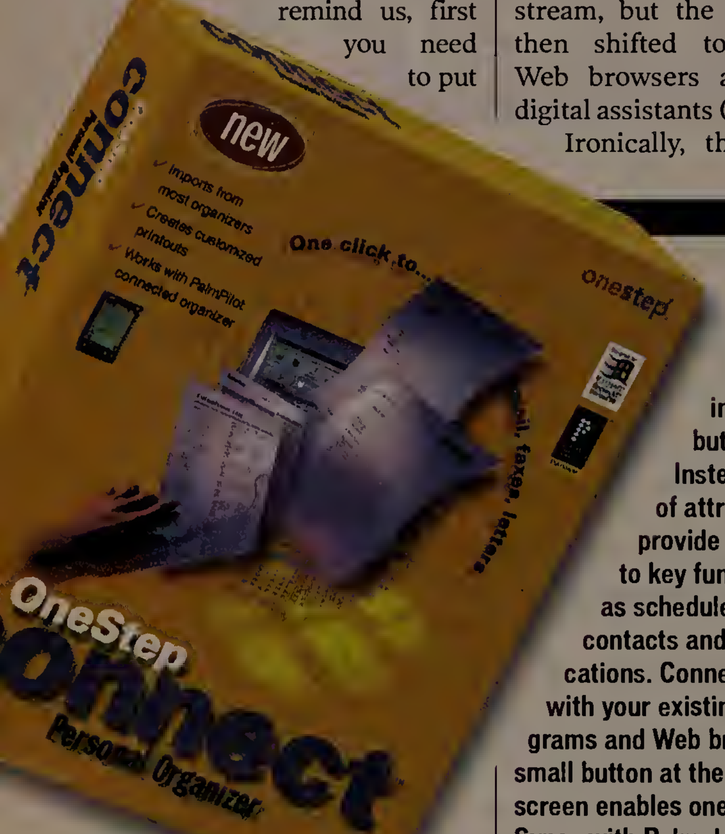
Unlike General Magic Inc.'s Portico and other Web-centric services that store your information on the Internet, these low-cost (typically less than $100) PIMs can support mobile computing and online sharing but are firmly rooted on the desktop.

Yet even the busiest road dog like myself will find them very portable and simple to use. You can't tie cell phones or pagers to those devices yet, but how much excitement do you want late at night in a hotel room far from home?

The following are recent PIM introductions worth checking out. All work well in existing Windows/Outlook/Explorer environments running Windows 95, 98 and NT (and most support Netscape, too). All are acceptably stable; won't interfere with more robust intranet, corporate portal or other enterprise knowledge management applications; and will let you import, export or otherwise leverage existing PIM and corporate data.

Although the four new tools reviewed here won't change your corporate desktop standard, they can be extremely useful in creating personalized, orderly ways of handling your corner of the ever-expanding information heap.

Maglitta is Computerworld's industry editor. Contact him at joseph_maglitta@computerworld.com.


new
✓ Imports from most organizers
✓ Creates customized printouts
✓ Works with PalmPilot connected organizer
One click to...
...il, faxes, letters
onestep
Connect
OneStep Connect
Personal Organizer

OneStep Connect 1.0

OneStep LLC
www.onestep.com
$49.95
Pros: Clean interface, easy to learn and use, excellent document creation and distribution.
Cons: Tasks can't be dragged into the calendar (but that ability should be added to Version 2.0 later this year). No current Windows CE support. Phone support limited to 8 a.m. to 5 p.m., Mountain Standard Time.
Best for: Novice, administrative or nontechnical executive users and 3Com. Corp. Palm device users.

Interestingly, this newcomer from start-up OneStep in Loveland, Colo., feels like a mature version of Microsoft Outlook. I found everything about this elegant online planner to be clean, clear and business-like.

An uncluttered desktop eschews multiple layers of confusing tool bars, buttons, etc. Instead, two rows of attractive icons provide easy access to key functions such as schedule, to-do list, contacts and e-mail applications. Connect 1.0 works with your existing e-mail programs and Web browser; a small button at the bottom of the screen enables one-click HotSyncs with Palm devices.

But Connect 1.0 really shines in generating paper and online documents.

Thanks to a wide variety of document templates (including Microsoft Word and most major calendar planners), users can create and send letters, e-mail, faxes, print labels and calendar pages with a couple of clicks.

Natrificial Brain 1.70

Natrificial LLC
www.thebrain.com
$50
Pros: Natural, graphical and visual organization of diverse desktop and online information.
Cons: Limited power for workgroups; no current Macintosh or PDA support.
Best for: Nonlinear thinkers and those eager to take the next step in user interfaces.

For some users, the flat, structured, texty approach of most PIMs never feels quite right.

Enter the Brain. This innovative software organizes ideas around the way you think – as opposed to a program or file type. Think of it as "Neural Networks Lite." Drag-and-drop icons quickly create various "thoughts" that contain a variety of user-selected desktop and Internet-based information.

You can interlink other thoughts on your desktop and, if desired, publish to a corporate intranet or the Web. Every thought is accessible via a single, visual interface. A bonus? The Brain can map an entire Web site in seconds. No wonder Andersen Consulting, the City of Los Angeles and other heavy hitters are fans. But officials at the tiny Santa Monica start-up say the individual Brain is just the start.

The company will soon release several new versions, including a Java-based Brain, "Site" Brains for use on Web pages, PalmPilot Brains and a Brain server.

Enfish Tracker Pro 1.2

Enfish Technology Inc.
www.enfish.com
$79.95
Pros: Easy to use; quick searches of multiple files and program types.
Cons: Could be even quicker; runs better on big machines.
Best for: Fast searches, ongoing monitoring of changing information.

Anyone who's gone nuts waiting for Windows or search engines to muddle through thousands of files and pages will appreciate Tracker Pro.

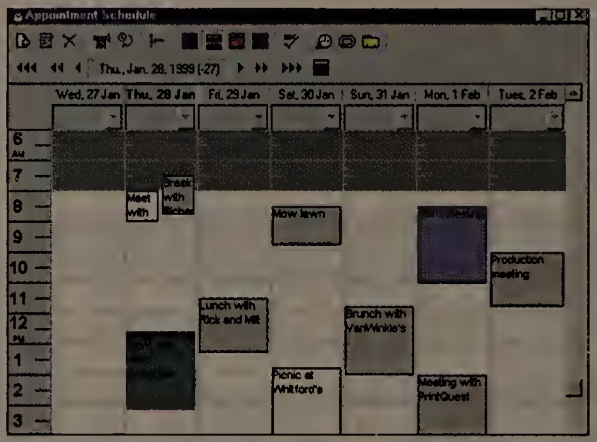
Although not strictly a PIM, Tracker Pro 1.2's goals are similar to the Brain's user-controlled organization of diverse information sources.

Tracker Pro 1.2 indexes your hard drive and Web resources (which can take an hour or more) and creates Tracker categories to which you can add projects, people and topics you'd like to track on an ongoing basis.

Then it monitors for updates. Local Tracker searches yield neat lists of related items.

Tracker Pro 1.2 effectively frees users from filing. With the built-in Web-site channels, the final effect is a hybrid local search engine and portal that's easily customizable. Version 1.2 fixes the bugs and sluggishness that marred its initial release last fall.

Even so, this is a monster program, so set aside 50M bytes on your hard drive.



THE FRANKLIN PLANNER 7.0 gets high marks for its ability to integrate various media

Franklin Planner 7.0

Franklin Covey Co.
www.franklincovey.com
$99
Pros: Best available information sharing among PC, PDAs and print environments; life-planning tools link tasks with personal values and goals.
Con: A bit bland.
Best for: Those who shift between paper and online, and current Franklin Covey users and life planners.

No time- and goal-management system has inspired the near-cult-like loyalty of Franklin-Covey users.

For nearly a decade, the company's Ascend software has been a favorite adjunct to its popular printed organizers.

The latest version provides the best integration anywhere among Outlook-like desktops, palm-style devices and printed planners.

That's a real plus that neatly solves mobile-era conundrums such as, Should I organize on paper only? Online and paper? Online only?

With Franklin Planner 7.0, you transfer as much (or as little) as you want among the various environments.

The plus here is that you have the choice. The software's other distinguishing feature is Franklin Covey's trademark linking of life goals and values to everyday schedules and tasks.

SMARTsourcing
CONFERENCE & EXPO SERIES

The World's Largest Forum Focused Exclusively on Next Generation IT Outsourcing Services and Solutions

BrainStorm Group's

SMARTsourcing SOLUTIONS GUIDE

THE OFFICIAL PUBLICATION OF THE SMARTSOURCING CONFERENCE SERIES

San Francisco

June 28-30, 1999

The Fairmont Hotel Atop Nob Hill

Out with IT?

Is your IT department a core competence or a core incompetence?

Page S-3

Hired Hiring Guns

How TWA used outsourcing to solve its IT staffing crunch.

Page S-7

High-Maintenance, Low Value-Add?

Functions you should outsource in a heartbeat.

Page S-10

Get It Off your Chest

Your outsourcing vendors can do better. If you speak up.

Page S-13

Outsourcing E-business

If done right, there's lots of cost savings waiting.

Page S-14

Application Outsourcing

How it can free CIOs to focus on business needs.

Page S-4

More...

From Our President S-2
Conference Agenda S-8
Registration Info S-15

SMARTsourcing
CONFERENCE & EXPO SERIES

BrainStorm Group Comes to San Francisco!

Gregg V. Rock
President & Founder
BrainStorm Group, Inc.
gvr@brainstorm-group.com

> **"I would recommend this event to IT and non-IT executives looking to educate themselves on the benefits & risks assumed with outsourcing."**
>
> *—Oakie Williams, Author of Outsourcing: A CIO's Perspective*

Visit our web site
www.brainstorm-group.com
to hear audio overviews from select San Francisco presenters.

BrainStorm Group's SMARTsourcing Conference Series has quickly established itself as the premier meeting place for senior business and IT management to evaluate their strategic partnering options with the world's leading professional IT Outsourcing service and solutions providers.

Building on the success of the inaugural event held recently in New Orleans, the *San Francisco SMARTsourcing Conference Program* will feature "the best minds in IT Outsourcing," including top-rated presenters from previous BrainStorm events, all new case studies from experienced outsourcing veterans, and leading IT Outsourcing analysts/consultants. A conference overview and list of presenters is available on pages S-8 & S-9.

No longer just for the Fortune 500!

As organizations of all sizes reflect on their sourcing options, the SMARTsourcing Conference Series will provide the most comprehensive coverage on:

- Issues to consider when entering outsourcing agreements
- Getting the most value from your existing outsourcing relationships and partners.
- Hottest SMARTsourcing Trends: ERP, CRM, BPO, Application Development Outsourcing, E-Business Services, Maintenance Outsourcing, and more...

San Francisco Convention and Visitor's Bureau Photos

SMARTsourcing Solutions Guide

The official publication of BrainStorm Group's SMARTsourcing Conference Series. This quarterly publication features insightful articles:

- Hear from *TWA's Acting CIO, Gwyn Myers* on the benefits TWA has attained through the strategic implementation of SMARTsourcing. **Page S-7**
- *Ian S. Hayes, President of Clarity Consulting and SMARTsourcing Co-Chairman* addresses the increased importance that outsourcing will play in IT organizations of the future in his lead article *"Is IT Really A Core Competence Of Your Company?"* **Page S-3**
- *"Challenge Your Outsourcing Vendors"* by *William M. Ulrich, President of Tactical Strategy Group and SMARTsourcing Co-Chairman,* identifies additional tips for leveraging your relationships with current strategic partners. **Page S-13**
- *Hurwitz Group's Bill Martorelli, Vice President of Application Resourcing Strategies,* discusses the emergence of services and solutions surrounding E-Business in *"E-Business Services."* **Page S-14**
- *Giga Information Group's Julie Giera, Research Director,* provides insight on selecting the right strategic partner for your organization in *"An Insider's View on Outsourcing."* **Page S-10**

Special Thanks

The *SMARTsourcing Conference Series* has become a reality thanks to the support of our event, media and analyst co-sponsors, which you will find profiled and recognized throughout this Solution Guide. Additional thanks goes to our presenters and Executive Advisory Board members (see page S-9) whose expertise and insight has been integral in establishing the *SMARTsourcing Conference Series* as a must-attend forum for IT Outsourcing practitioners.

Come join us in San Francisco for some BrainStorming!

About BrainStorm Group

Based in Northboro, Massachusetts, BrainStorm Group, Inc. was founded in 1997 by Gregg V. Rock with the intent of establishing itself as the premier producer and developer of high technology conferences and events. In addition to the SMARTsourcing Conference & Expo Series and the YEAR 2000 National Symposium Series, BrainStorm Group offers a set of integrated services in the areas of proprietary conference development and the outsourcing of content development, sales, event marketing and management for the high technology marketplace.

Previous SMARTsourcing attendees include:

- AT&T
- Apple Computer
- State Farm Insurance
- Fidelity Investments
- TRW, Inc.
- VA Hospital
- Philip Morris USA
- Tribune Company
- Burlington Northern
- Blue Cross/Blue Shield
- Discover Financial Services
- Coca-Cola
- Walt Disney
- Frito Lay
- Entergy
- Kraft Foods
- Chase Bank
- Glaxo-Wellcome
- U.S. Coast Guard
- TWA

Ian Hayes of Clarity Consulting asks:

IS IT REALLY A CORE COMPETENCE OF YOUR COMPANY?

SMARTsourcing
CONFERENCE & EXPO SERIES

Let's face it, we can't be perfect in everything. Everyone has tasks they excel in and tasks that may be best performed by someone else.

Often the hallmark of a super-achiever, whether in sports, the arts or business, is a single-minded focus on obtaining excellence in a sole discipline. This principle is the foundation of the term "core competence."

A core competence is a particular discipline, function or operation where a company excels. Today there are countless business books and articles exhorting executives to concentrate on their company's core competencies, rather than trying to excel in all functions, operations and markets. To survive and thrive in our global economy, every company must have some core competencies. The question is whether information technology (IT) is one of them.

No one can dispute that excellence in IT is a fundamental requirement in today's highly technological and networked world. It is equally clear that many companies are less than perfect in all aspects of their IT performance. One has only to look at the current Year 2000 crisis for evidence that IT is not a core competence for most companies.

The typical corporate CEO has been forced to spend large sums of money, defer critical strategic initiatives, accept legal responsibility and endure endless inquiries from investors, analysts, customers and the SEC over concerns about their company's preparedness. All of this disruption and frustration due to a problem that has existed since the dawn of the computer age, a problem that the CEO's IT organization was slow to recognize and address. To the CEO, IT was always a backroom operation that, despite business area complaints, seemed to function adequately. Suddenly the CEO discovered:

- The IT organization couldn't accurately identify their inventory of applications, packages, hardware and network components without performing a costly analysis to track down the missing pieces.
- Despite early assurances that the problem was limited to old mainframe systems that would be eliminated well before the end of the century, the problem pervades even the newest systems. Worse, few of the old systems will actually be replaced in time.
- Much valuable time was lost due to false starts, poor project management and IT managers falling for questionable "silver bullet" approaches.
- The IT organization's processes, such as configuration management and testing, were woefully inadequate for even normal operations. (Imagine the CEO's reaction when he or she realizes that this weakness means that the IT organization may not have ever performed adequate testing.)
- Armies of consultants and outside specialists were required to save the day.

(Continued on page 5)

SMARTsourcing Co-Sponsor Profiles

PRICEWATERHOUSECOOPERS

144 Middlesex Turnpike, Burlington, MA 01803
T: 781-229-1039 F: 781-229-1092 www.pwcglobal.com

PricewaterhouseCoopers' Solutions Thru Technology (STT) group delivers systems solutions that combine business and industry knowledge with advanced technologies.

Application Maintenance Support Services manages and controls legacy software, applications, and databases for companies that outsource their applications maintenance requirements to STT.

Consumer and Industrial Systems addresses ECR, supply chain and go-to-market initiatives.

Customer Marketing and Management Solutions implements customized, integrated database marketing programs and systems.

Data Warehousing helps companies develop and implement successful data warehousing and decision support environments.

Emerging Technologies provides planning, analysis, architecture, design, implementation and conversion services for new application environments.

Insurance and Managed Care assesses current technologies, determines long-range needs and tailors solutions for insurance and managed care companies.

Internet Services designs, manages and rapidly implements profitable Web strategies, infrastructures and software solutions.

Software Evaluation and Implementation Strategies helps companies evaluate and select software packages, including ERP and supply chain management.

Sales & Field Force Automation helps companies select, plan and implement technology solutions to achieve sales goals.

Software and Infrastructure Testing helps mitigate risks and potential costs of software catastrophes by identifying problems before systems go live.

SUMMIT-D®, PricewaterhouseCoopers' proprietary systems development methodology, provides in-depth delivery guidance and minimizes project risks.

PricewaterhouseCoopers, the world's largest professional services organization, helps its clients build value, manage risk and improve their performance.

Drawing on the talents of more than 150,000 people in 150 countries, PricewaterhouseCoopers provides a full range of business advisory services to leading global, national and local companies and public institutions. These services include audit, accounting and tax advice; management, information technology and human resource consulting; financial advisory services, including mergers and acquisitions, business recovery, project finance, and litigation support; business process outsourcing services; and legal services through a global network of affiliated law firms.

PEOPLESoft

4460 Hacienda Drive, PO Box 8018
Pleasanton, CA 94588-8018
T: 925-225-3000 F: 925-694-4444
www.peoplesoft.com/en/why_peoplesoft/outsourcing

About PeopleSoft

Founded in 1987, headquartered in Pleasanton, California, 53 offices in 14 countries. Worldwide provider of enterprise software solutions for accounting, materials management, distribution, supply chain management, manufacturing and human resources.

Industry-specific solutions for financial services, healthcare, higher education, manufacturing, public sector, retail, service industries, U.S. federal government, communications, transportation, and utilities.

Why Outsource?

Globalization of markets. In a global, increasingly networked economy, markets are constantly in flux, customers are more demanding, and new competitors can literally appear from anywhere overnight. Establishing world-class standards often entails huge capital outlays.

Deregulation and new competition. As business models shift, organizations will need to shift their business strategies to reduce the costs of their operations and determine how to better utilize both their capital and human assets.

Technology costs and complexity. As technology grows more complex, so do many of the costs associated with it. Many companies want to benefit from enterprise application software yet cannot afford to maintain the resources internally. Compounding their difficulty is the current shortage of qualified IT expertise.

World-class operations demand specialists. Companies' business strategies demand more flexibility and speed from their IT divisions than these divisions can deliver on their own. Access to specialists can bridge the gap and help companies meet world-class standards and employ best practices.

The move to e-business. Similar to Y2K in its immediacy, e-business has many companies still struggling to formulate a cohesive Internet strategy.

Benefits of Outsourcing

Outsourcing enables customers to focus their energies and resources on adding value to their organizations. The traditional emphasis on short-term cost-cutting is being replaced by more strategic considerations like minimizing risk, improving productivity, improving customer and employee service, and accessing new business skills and technologies. Increasingly, organizations are recognizing a long-term value in outsourcing as an effectiveness tool.

The PeopleSoft Solution

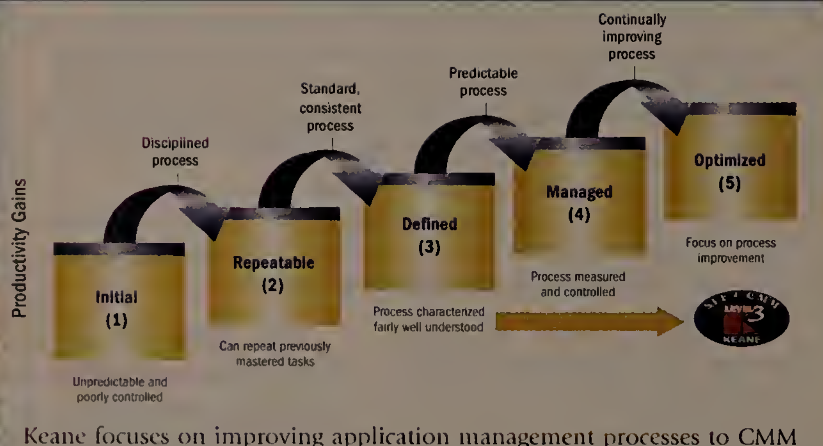
PeopleSoft understands that not all organizations want to invest substantial resources to acquire the talent, knowledge, and skills needed to deliver all types of services internally. PeopleSoft, in conjunction with our Certified Outsourcing Partners, provides a variety of outsourcing solutions.

AN EXECUTIVE OVERVIEW BY KEANE, INC.

Improving the Performance of Application Portfolios

Competitive pressures are creating the increased demand for improved service levels, shorter cycle times, and reduced costs from IT organizations. A critical challenge facing CIOs is how to manage a high-performance IT organization while focusing on strategic direction. Increasingly, companies are leveraging application outsourcing as a means to build a high-performance IT organization and free the CIO to focus on the needs of the business. This overview to Keane's CMM White Paper highlights the advantages of improving application management processes and demonstrates how outsourcing can compress the time needed to build a high-performance IT organization.

The CMM Improvement Process


Productivity Gains
Initial (1)
Unpredictable and poorly controlled
Disciplined process
Repeatable (2)
Can repeat previously mastered tasks
Standard, consistent process
Defined (3)
Process characterized fairly well understood
Predictable process
Managed (4)
Process measured and controlled
Continually improving process
Optimized (5)
Focus on process improvement
LEVEL 3
KEANE

Keane focuses on improving application management processes to CMM Level 3, thereby helping clients drive defects out of systems, shrink support costs and, most importantly, build high-performance IT organizations that better support the business.

Today, nearly every core business process is supported by Information Technology, and each year, IT portfolios continue to grow larger and more difficult to manage. The problem is, these software application environments often lack the standards, processes and metrics needed to optimally support the business.

This situation has a direct impact on a company's performance:

- Cycle times to new functionality are prolonged,
- The cost of systems enhancements and support is needlessly high, and
- Progress on strategic initiatives is continually thwarted.

One increasingly common business practice used to address this challenge is outsourcing. By bringing in a service provider to manage its applications, companies can re-focus efforts on activities that support their core business strategies. At the same time, their outsourcer can implement operational improvements and world-class IT processes that lead to improved performance, reduced costs, greater predictability, more efficient application maintenance, and enhanced customer/user satisfaction.

Managing Technology Improvements through the SEI CMM

As companies focus on improving processes throughout the IT organization, the question becomes, "How can we be assured outsourcing is making us more effective?"

The answer may lie, in part, in the Capability Maturity Model (CMM), established by the Software Engineering Institute (SEI) at Carnegie Mellon University, which is rapidly becoming the de facto industry standard for measuring the effectiveness of IT organizations, particularly their software development and maintenance processes. Companies are using this model to assess the quality of existing processes against the CMM's five process maturity levels and determine the steps needed to improve these processes. Each CMM level outlines practices to be adopted and goals to be met before advancing to greater process maturity.

Achieving Quantifiable Business Benefits

Keane views CMM-aligned outsourcing programs as a means for realizing significant, quantifiable business value. By improving the processes of application management (i.e., maintenance, enhancements and user support) to Level 3 standards, organizations can shrink the costs associated with legacy applications. This is accomplished by driving defects out of systems and weaknesses out of processes. The key business benefit is the attainment of software applications that better support the business.

Move Up the CMM Faster

On the CMM scale, most IT organizations are currently at Level 1—far from the process maturity status required for today's competitive business environment. To advance from the lower end of the CMM, IT organizations need massive effort, organizational commitment and cultural change. One proven strategy for accelerating CMM advancement is application outsourcing. A leading outsourcer can assist in the following ways:

- Establish an advanced process model
- Introduce metrics, management controls, and a methodology
- Create a continuous improvement environment
- Help overcome cultural barriers

The Bottom Line

In a world of information-based competition, companies must build high-performance IT organizations that are responsive to the business. Outsourcing is the fastest and most effective way to accomplish this objective. The SEI CMM, which provides a roadmap of clearly defined process improvements for achieving higher performance, allows companies to objectively benchmark their IT organizations and outsourcers.

Keane at the SMARTsourcing Conference in San Francisco

How fast can you move up the CMM and what kind of difference will doing so make in your organization?

Keane's Tim Barry, Application Outsourcing Practice Director, will discuss these and other CMM-related topics at the San Francisco SMARTsourcing Conference on June 28. His talk will canvass the competitive advantages of CMM-aligned outsourcing programs and how Keane's solution has enabled clients to earn CMM Level 3 certification within 12 months, as opposed to the industry average of approximately 3.5 years.

For a white paper on how you can align your outsourcing program with the CMM, call 1-800-324-9019.

IS IT REALLY A CORE COMPETENCE. . .

(Continued from page 3)

And this is the organization that the CEO is relying on to bring the company into the 21st century? No wonder so many CEOs are questioning whether IT is a core competence. No wonder most analysts expect a massive increase in outsourcing once the century transition is finally completed.

Does this mean the end of IT as we know it? Not necessarily. But CIOs will face many challenges in rebuilding confidence in their organizations in the post-Y2K world. They will have large backlogs of deferred and delayed projects and increased inventories of applications and technologies that have become obsolete while IT focused on Y2K work.

The technology environment has grown so complex that only the largest and most profitable companies can afford to maintain the skills and staffing they need to cover all aspects of their technology requirements. The IT processes of the past are no longer adequate to support this world, and the new processes must be robust enough to survive the increased level of legal and executive scrutiny now turned to IT issues.

Core Competence Focus

Long-term success requires a focus on core competence within IT. The post-Y2K CIO must recognize which areas are truly competencies and which are best performed elsewhere. An objective viewpoint is required; IT often makes the mistake of sourcing older areas where they actually excel, while keeping newer, more attractive areas where they lack the skills to succeed. Should the organization really invest the time and effort in developing functionality and skills that are easily available elsewhere?

The IT organization's strongest skills become the initial building blocks to create a functionally "best of breed" IT organization. The remaining blocks are added by selectively sourcing areas outside the IT organization's core competencies to external partners specializing in those areas.

The market is filled with prospective partners capable of fulfilling virtually any need, from pre-packaged software to development and support services. The trick is to select partners whose own core competencies mesh well with those of the IT organization. The completed collection of building blocks will likely consist of several partners, each contributing their core competence to the final solution. The sum of these blocks should be an IT organization that is a corporate core competence. The CIO's role then becomes one of managing and optimizing this mix of competencies to match the corporation's evolving strategies and requirements. This approach is the essence of smart sourcing.■

Founder and President of Clarity Consulting, Inc., Ian Hayes specializes in strategic consulting on issues surrounding the management and support of corporate business systems. He has advised hundreds of companies on a variety of IT issues including insourcing, outsourcing and process improvement. He has co-authored two books on the Y2K software crisis. He can be reached at ian_hayes@compuserve.com.

SMARTsourcing Co-Sponsor Profiles

KEANE

10 City Square
Boston, MA 02129
T: 617-241-9200 F: 617-241-8027
www.keane.com

Keane, Inc. is a $1 billion IT services firm helping clients plan, build and manage application software to achieve business advantage. The company's core services encompass operations improvement consulting, custom application development, e-solutions®, customer relationship management, data warehousing, and application outsourcing. These services are delivered through enterprisewide practices supporting a network of more than 50 branch offices in North America and the United Kingdom.

Keane's Application Outsourcing Solution

The company's Application Outsourcing solution, under which it assumes full accountability for ongoing maintenance, support, and enhancement of production systems, provides a powerful response to the business challenge of managing application portfolios.

At the foundation of Keane's Application Outsourcing solution is its world-class methodology, which is aligned with the standards and key processes delineated in the Software Engineering Institute's Capability Maturity Model (the CMM). Keane focuses on improving application management processes to CMM Level 3 standards, thereby helping clients drive defects out of systems, shrink support costs and, most importantly, build high-performance IT organizations that better support the business.

Keane's approach introduces and establishes a structured business process model for managing application portfolios according to guaranteed service level agreements at a fixed price. This process model enables clients to

- Streamline maintenance and support operations
- Implement process improvement procedures
- Institute standards, project management disciplines and appropriate metrics
- Measure and improve performance in work volume, quality, cost, cycle times and customer satisfaction.

The Benefits

Keane's Application Outsourcing solution is enabling clients to manage their application portfolios as a critical business asset. Key benefits clients are experiencing include the following:

- Tighter control of IT maintenance and support operations, enabling focus on big-picture IT issues
- Reduced costs associated with application management, contributing to improved bottom-line performance
- Improved user satisfaction based on targeted improvements in service as well as software quality
- Increased availability of key resources to focus on new development initiatives
- Support for newly deployed applications, enabling quicker return on investment.

RCG
INFORMATION TECHNOLOGY

5430 LBJ Freeway-Three Lincoln Center, Suite 320
Dallas, TX 75240
T: 972-855-2200 F: 972-855-2294
www.rcgit.com

It's About Trust

As one of the fastest growing consulting firms in the industry, RCG Information Technology understands change. RCG has successfully partnered with Fortune 1000 companies to deliver mission critical applications and systems for over 27 years. Our clients trust that we will deliver the highest level of information technology and business operations services. In today's marketplace, where speed is the constant driver of both business and technology enablers, you need a **trusting** partnership more than ever.

Outsourcing Vision

As business models are constantly evolving, focus and precision become mandatory characteristics of a successful enterprise. Companies can no longer count on long-term competitive advantages. Outsourcing certain elements of your enterprise will allow your organization to focus on the mission critical elements that deliver your differentiation in the marketplace. RCG IT has been partnering with clients to solve outsourcing engagements of **application development, maintenance, business processes, and call centers** with the help of 3000 consultants in 26 offices in the United States, and key cities in Europe, Asia, and Africa.

Outsourcing Objectives

Improved service means exceeding our clients' expectations with a full range of services to help them stay on the leading edge of business and technology. With expertise in **Oracle,** and our partnerships with **SAP, PeopleSoft,** and **JD Edwards,** RCG IT is positioned to build innovative outsourcing solutions that further develop the necessary trust.

Strategic Planning allows our clients to effectively pilot the ship. RCG acts as the navigator, helping to guide. RCG's outsourcing offerings deliver enterprise application benefits, technical expertise, and cost predictability. Engaging our **Business/Operations Analysis** group further supports our client's ability to manage change and maintain continuous improvement.

Quickly reacting to business change has become the necessary profile of successfully enabled organizations. Trusting RCG as your outsourcing partner enables your enterprise to react quickly, knowing the RCG IT will be supporting your direction. With our **E-Business and Knowledge Management** expertise, RCG IT will deliver your internal expertise to the marketplace quickly and decisively.

As you move forward to build your high-performance enabled IT enterprise, you need an outsourcing partner you can **trust** to help you navigate through an ever quickening competitive marketplace. To see how RCG embodies trust, let's build your solution today.

1-877-IT LEGACY

WEB-ENABLING

APPLICATION OUTSOURCING

ERP

E-COMMERCE

RE-ENGINEERING/CONVERSIONS

EURO COMPLIANCE

E-CONSULTING

Hexaware helps move your legacy systems into the future. Legacy apps running on a mainframe, client/server, AS/400 or any other midrange platform. These were based on the young, hot technologies of their day. The challenge is to continue their relevance into the next millennium.

At Hexaware, we specialize in moving your technology investment from the past into the future.

Call Hexaware at 1-877-IT LEGACY for a free consultation to discuss options available for your legacy systems.

MAKING IT INVESTMENTS COUNT.℠

HEXAWARE
TECHNOLOGIES, INC.
www.hexaware.com

PRINCETON CHICAGO SAN FRANCISCO PHOENIX TORONTO MONTREAL LONDON MADRAS BOMBAY

SMARTsourcing
CONFERENCE & EXPO SERIES

Dr. Gwyn Myers, Acting CIO for Trans World Airlines (TWA)

SMARTSOURCING IN ACTION

Dr. Gwyn Myers is acting CIO of Trans World Airlines (TWA), where she heads up an IT department of approximately 400 employees located in Kansas City, Mo. In January, TWA outsourced its IT recruitment process to Computer Horizons Corp. Since then, CHC specialists have performed the IT staffing function. Another element that CHC brings to the recruitment process is its Computer Horizons Information Management Efficiency System (CHIMES), a customized, web-enabled decision-making system.

Dr. Myers was interviewed by Deborah Melewski, a freelance writer who specializes in the high-tech field.

Q: *What led TWA to outsource this part of its operations ?*

A: We just couldn't handle our tremendous hiring needs internally. The IS area is a very hot field right now, and with the number of people we needed to hire, we couldn't do it all internally with just one recruiter.

Q: *Does CHC oversee the recruitment process end-to-end?*

A: They act as staff members in IS, they have offices and they really are our on-site recruiting department. They take over the process from the beginning, once a requisition is approved. They arrange all the interviews, and when the person comes on, they go through the orientation with them.

Q: *What financial benefits does TWA expect to realize from its partnership with CHC?*

A: CHC deals with the vendors (head hunters) to make sure that our rates with them are consistent and the most economical we can get.

Q: *What was your criteria in choosing CHC?*

A: There aren't too many people who do this. We found one of the strong selling points for CHC is their willingness to vary their staffing levels. For example, we had such a crunch here in Kansas City that they added another person. Now they have three people here. They added two recruiters in Chicago to help with the staffing of a new facility.

Q: *Can you summarize what the CHIMES system is?*

A: CHIMES is a paperless system developed by CHC that is ISO-9000 certified. It not only fulfills all EEOC requirements, but it ensures fairness because all the requirements go out to all the vendors at the same time. It also tracks and time-stamps everything: when a resume comes in, whether it is rejected or sent along to the hiring manager, when interviews are held, and when people are hired or rejected.

Q: *What are the advantages of a web-enabled decision-making system?*

A: It's paperless, and you can measure anything you need to measure, you can see where you have backlogs in the system. We can see if our percentage of hires to interviews is in line. We can see the numbers of interviews coming out of resumes sent by each vendor. We can also follow through and track the stay rate, so if somebody comes in and six months later they're gone, we can find if there's a pattern there to the manager or the vendor, and work on that.

Q: *What pitfalls exist in outsourcing a process like this?*

A: CHC has to learn the internal processes of TWA, and TWA has to learn the processes of CHC. CHC has had to learn about TWA's paper flow. And the system is paperless, but even though we all talk about having a paperless system, when we actually have one, we don't quite know what to do with it, it's such a different process.■

SMARTsourcing Co-Sponsor Profiles

Computer Horizons Corp.

49 Old Bloomfield Ave.
Mountain Lakes, NJ 07046
T: 973-299-4000 F: 973-402-7988
www.computerhorizons.com

Computer Horizons Corp. is a strategic IT services supplier with over 4,000 billable consultants and 55 offices worldwide. The company enables its Global 1000 customer base to realize competitive advantages though enterprise application solutions, e-business, customized Web development and Web enablement of strategic application portfolios. Specific offerings include Customer Relationship Management (CRM), e-business, network services, ERP, strategic outsourcing and managed resourcing, as well as a best-of-breed selection of software and relational database products.

Computer Horizons offers an integrated "Market Leadership" approach to transforming its clients into the modern e-business world. The approach combines our various talents of our Strategic Emerging Practices organization, i.e.: CRM, e-Business, ERP, Outsourcing, and Managed Resourcing. CHC solutions are designed with combined synergy to provide total integrated solutions that enable clients to gain competitive and operating advantage.

CHC's integrated framework approach sponsors a full life cycle methodology with multiple entry/exit points, reflecting our commitment to respond to the needs of our clients. The solution offerings uniquely combine best-in-class products, proven processes, and tested project management practices supported by skilled technical resources providing a full range of consulting services that covers: Strategy, Architecture, Engineering and Design, Implementation and Operations.

With the understanding of information technology and the contemporary information management system, Computer Horizons has built a very strong set of service offerings, designed to meet the needs of large business organization, now and into the future. These offerings have been successfully marketed to the world's largest financial institution, the world's largest insurance company and the world's largest telecommunications service provider.

Businesses around the world are facing more obstacles than ever before. To succeed in this new business climate, companies should bolster their strengths, and focus resources on core competencies to ensure increased shareholder value. Conversely, companies should entrust decentralized and mission critical operations—such as information technology—to business partners with the expertise and experience to upgrade and maintain functions into the future.

As one of the country's foremost diversified information technology companies, Computer Horizons, led by a management team dedicated to client-driven objectives, has been serving as that kind of business partner both devising solutions and implementing them since 1969.

HEXAWARE
TECHNOLOGIES, INC.

5 Independence Way
Princeton, NJ 08540
T: 609-951-9195 x1204 F: 609-951-9638
www.hexaware.com

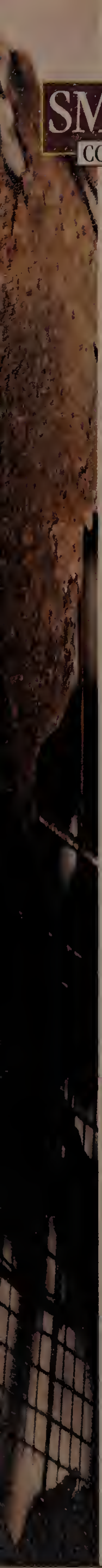
Hexaware Technologies, Inc. is a leading developer and implementer of business application solutions for mainframes, client/server, AS/400 and other midrange systems. Global services include:

- Euro conversions
- ERP implementations and support, with special expertise in PeopleSoft Financials, Human Resources and Student Administration modules,
- Application outsourcing
- E-consulting services
- E-commerce solutions
- Y2K conversions, remediation, Independent Verification & Validation (IV & V) techniques and business contingency planning.

Hexaware helps move legacy systems into the future. Our expertise with mainframes, client/server, AS/400 or other midrange systems allows us to develop solutions that continue the relevance of those legacy systems. We offer a large pool of certified programmers, developers, engineers, skilled project managers and technical consultants, all of whom are skilled in legacy and evolving platforms, tool sets and languages. Depending upon the size of the project, our project teams can be comprised of on-site Project Manager(s) and a team of functional consultants who assist IT departments in achieving their corporate strategic initiatives. In addition, teams can also include off-site and off-shore functional and technical consultants.

Our SatNet™ Competency Centers are linked by satellite to our US offices. The facilities are ISO 9001 certified, and a dedicated quality team is working toward SEI CMM Quality Level 4 by the end of 1999. The time difference provides our teams with a virtual 24-hour work cycle, which offers customers a shorter time to market, and a significant cost savings. In some instances, we have dedicated SatNet Competency Centers for particular clients who have outsourced the maintenance of their applications to Hexaware. This operating model allows customers to reduce their costs, maintain critical systems, and provides a continuity of technical resources during this time of constrained resource availability.

We support clients in brokerage, banking, insurance, transportation, and higher education. Hexaware has its North American corporate headquarters in Princeton, New Jersey, and has regional sales offices in Chicago, Illinois, Pleasanton, California, and Toronto and Montreal, Canada. For additional information, check out our web site at http://www.hexaware.com, or call 1-877-IT LEGACY.



SMARTsourcing
CONFERENCE & EXPO SERIES

San Francisco Conference-at-a-Glance

Day 1 June 28, 1999

8:25-8:45 am	**Introduction and Defining SMARTsourcing** Ian S. Hayes, *Conference Co-Chairman and President* Clarity Consulting, Inc.
8:45-9:30	**Executive Keynote: The Productivity Paradox** Paul S. Strassmann, *President*, Information Economics Press
9:30-10:15	**Morning Keynote: Transforming the Organization through SMARTsourcing** Michael F. Corbett, *President* Michael F. Corbett & Associates
10:30-11:30	**Feature Case Study: Gaining Business Advantage Through SMARTsourcing**
11:30-12:45	**Executive Luncheon *sponsored by* Keane**
12:45-1:45	**Managing Partner Relationships** Peter Bendor-Samuel, *Editor*, Infoserver and *President*, Everest Group
1:45-2:30	**Launching a Successful SMARTsourcing Engagement** Ian S. Hayes, *Conference Co-Chairman and President*, Clarity Consulting, Inc.
2:45-3:30	**Challenging Your Outsourcer** William Ulrich, *Conference Co-Chairman and President*, Tactical Strategy Group, Inc.
3:30-4:30	**CIO Roundtable** Bruce Caldwell, *Editor, IT Services*, Information Week
4:30-6:00 pm	**Evening Reception and Solutions Showcase**

Day 2 June 29, 1999

	STRATEGIES TRACK	TRENDS TRACK
7:30-8:15 am	Power Breakfast *sponsored by* SEEC	
8:30-8:45	Morning Introduction	
8:45-9:30	Customer Relationship Management Case Study	
9:30-10:15	Sourcing Strategies: A Case Study	ERP Outsourcing
10:30-11:30	IT Process Improvement Panel	Customer Relationship Management (CRM) Panel
11:30-12:45	Executive Luncheon *sponsored by* Computer Horizons	
12:45-2:00	Solutions Showcase	
2:00-2:45	Navigating the Legal Maze	E-Services
2:45-3:30	Creating Corporate Outsourcing Policy	Business Process Outsourcing
3:30-4:30	Enterprise Resource Planning Case Study	
4:30-6:00 pm	Evening Reception and Solutions Showcase	

Day 3 June 30, 1999

	STRATEGIES TRACK	TRENDS TRACK
8:30-8:45	Morning Introduction	
8:45-9:30	Maintenance Outsourcing Case Study	
9:30-10:15	Outsourcing: A CIO's Perspective	Network Services
10:30-11:30	ERP Outsourcing Panel	Application Modernization & Maintenance Outsourcing Panel
11:30-12:45	Executive Luncheon sponsored by Oracle Consulting	
12:45-1:45	Measuring Outsourcers	Managing Offshore Relationships
1:45-2:30	Afternoon Keynote: Ten Imperatives for Future Success as a CIO Wendell Jones, *Author of Outsourcing Information Technology Systems & Services*	
2:30-3:15	Closing Keynote: Re-Aligning IT with Business Strategies William M. Ulrich, *Conference Co-chairman & President*, Tactical Strategy Group, Inc.	

SMARTsourcing Bootcamp

2:00-5:00 pm • Sunday, June 27

The SMARTsourcing Bootcamp is an interactive workshop based on a case study of an organization considering outsourcing.

Technology & Business Integrator's Gary Venner, Director of Consulting Services, with two senior Practice Managers, will provide methodology for the process of deciding whether to outsource, and how to proceed once the outsourcing decision is made. Attendees are typically broken into groups, each dealing with a major facet of the outsourcing decision.

Participants will also benefit from the insights of experienced consultants, supplemented by research from the TBI/IDC/CIO Magazine landmark study on the largest outsourcing deals consummated over the past 10 years.

Produced by BrainStorm Group and Technology & Business Integrators

Welcome Reception

Join Us on Sunday, June 27th from 5:00-7:00 pm

Produced by
BrainStorm GROUP, INC
Conferences and Event Management

Co-sponsored by
AberdeenGroup
COMPUTERWORLD c@reers
Cognizant Technology Solutions
Computer Horizons Corp.
CUTTER CONSORTIUM
EAI JOURNAL
EARTHWEB
ENTERPRISE SYSTEMS
Enterprise
Giga Information Group
HURWITZ GROUP
INFOSERVER
Kanbay

SMARTsourcing
CONFERENCE & EXPO SERIES

Produced by BrainStorm GROUP, INC.
Conferences and Event Management

San Francisco • Chicago • New York

☐ Send me more information on SMARTsourcing Conference & Expo
☐ Send me more information on YEAR 2000 National Symposium Series
☐ Keep me on your mailing list about upcoming events
☐ My company is interested in becoming a co-sponsor

Name Title

Company

Address

Town/City State Zip

Telephone Fax

Internet/E-Mail CW599

REGISTER TODAY! www.brainstorm-group.com

Register On-line or use the Registration Form on page S-15 of this BrainStorm Group Solutions Guide. For more information call 508-393-3266.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 14 NORTHBORO MA

POSTAGE WILL BE PAID BY ADDRESSEESEE

BRAINSTORM GROUP INC
386 W MAIN ST SUITE 3
NORTHBORO MA 01532-9920

An Unparalleled Conference Program

BrainStorm Group has brought together the world's leading IT Outsourcing experts to provide you with winning strategies for incorporating SMARTsourcing into your organization. No sales pitches, no cookie cutter program—just the facts. The SMARTsourcing Conference Series is committed to providing you with information on available sourcing options so that your organization can make an informed decision on selecting the right strategic partner.

San Francisco Program Highlights

Implementing SMARTsourcing:

- Redefining Outsourcing Options
- Latest Outsourcing Metrics
- CIO Roundtable: The Future of SMARTsourcing
- State of the Practice SLA's
- Managing Partner Relationships
- Navigating the Legal Maze
- Launching a Successful SMARTsourcing Engagement
- Managing Offshore Relationships
- Challenging Your Outsourcer

Hottest SMARTsourcing Trends:

- Business Process Outsourcing
- ERP Outsourcing
- Application Development
- eServices
- Network Services
- Application Modernization
- CRM Outsourcing

Case Studies

Attendee Benefits

Our San Francisco conference program will provide insight and education on the strategic advantages of SMARTsourcing, redefine antiquated images of "outsourcing", and present the business imperative for the strategic implementation of project sourcing as a way to leverage an organization's IT investment.

Attendees will receive:

- Admission to In-depth Working Sessions and the Exposition
- Evening Networking Receptions and Co-Sponsor Hospitality Suites
- SMARTsourcing Solutions Directory
- Discounts on IT Outsourcing Research Reports
- Conference Attendee List
- Complimentary Issues of Leading Publications
- Complimentary SMARTsourcing Welcome Package, Show Guide and Proceedings
- Admission to the Welcome Reception

SMARTsourcing Conference package also includes: daily hosted luncheons, coffee breaks, receptions, & special discounted room rates at The Fairmont Hotel Atop Nob Hill.

Who Should Attend?

Chief executives, operating, financial and information officers, divisional and business unit managers responsible for the evaluation, selection, purchase of outsourcing services and the management of outsourcing relationships. Make plans to attend SMARTsourcing San Francisco if you're looking to:

- Learn about the latest tools and metrics available to measure value created through IT Outsourcing.
- Gain expert insight from industry "thought leaders" on the latest developments and advantages of IT Outsourcing.
- Hear from experienced outsourcing veterans like DuPont, Michelin Tire, TWA, Dr. Pepper, AMS and others.
- Network with your peers from organizations across the United States and the world.

Executive Advisory Board

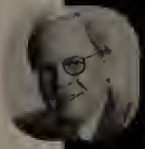
Ian S. Hayes
Co-chairman
Founder & President
Clarity Consulting, Inc.

William M. Ulrich
Co-chairman
President
Tactical Strategy Group, Inc.

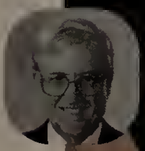
Bruce Caldwell
Editor-at-Large, IT Services
Information Week

Ann K. Coffou
Vice President
Giga Information Group

Michael F. Corbett
President & Founder
Michael F. Corbett & Associates



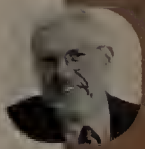
Steven L. Hock
Co-Founder & President
Triaxsys Research, LLC



Capers Jones
Chief Scientist
Artemis Management Systems

Julia King
National Correspondent
Computerworld

Stephanie T. Moore
Director
Giga Information Group



John Russell
Editor-in-Chief
Solutions Integrator

Additional San Francisco Presenters include:

Chris Campbell
Director of Sourcing Strategies
Gartner Consulting

Bill Martorelli
Vice President of Application Resourcing Strategies
Hurwitz Group

Gary Venner
Sr. Vice President and Director of Consulting
Technology & Business Intergrators

Oakie Williams
Author of
Outsourcing: A CIO's Perspective

Stephanie T. Moore
Director
Giga Information Group

Bruce Hall
Vice President
Trigent Software
and former Gartner Group Analyst

HEXAWARE TECHNOLOGIES, INC.
KEANE
MERCURY INTERACTIVE
MERANT
PKS
PEOPLESoft
INFORMATION TECHNOLOGY
Satyam
TRIAXSYS RESEARCH LLC
ORACLE Consulting
PRICEWATERHOUSECOOPERS
solutions integrator
SEEC
SOFTWARE MAGAZINE

Julie Giera of Giga Information Group

AN INSIDER'S VIEW ON OUTSOURCING

The SMARTsourcing Perspective

As a research director at Giga Information Group, Julie Giera covers a range of topics, including IT management, strategic planning and outsourcing. She is a 22-year veteran of the IT industry whose career includes stints as CIO of a major banking institution and as a senior executive in the outsourcing and professional services fields. She graciously agreed to be interviewed by Peter Bochner, Managing Editor of Computerworld's Enterprise Business Solutions Unit, while she was on vacation.

Q: *As a CIO, how much did you avail yourself of outsourcing, and what was the biggest motivating factor?*

A: When I was in the CIO position, very little outsourcing was done . Outsourcing was considered to be an option only for companies who were in trouble. Obviously that whole equation has changed in the past 10 years, particularly in the banking industry, where outsourcing is a strategic tool rather than just something to decrease cost.

Banking and financial services are very heavily dependent on technology, and as such, once deregulation hit, banks had to be more competitive than ever. In an environment of mergers, acquisitions, and increasing competitive pressure; outsourcing allows them to perform the core competency of banking rather than the IT function.

Q: *How often does a company have to bring an outsourced function back in-house?*

A: Less than 5% of the time is my rough guess. How hard it is to bring back in-house depends on the level of outsourcing the company has done. Once you have outsourced the infrastructure, it is extremely difficult, nearly impossible to bring it back in-house. There's a good argument for creating a core set of IT skills in house, and outsourcing around that, but it doesn't happen very often. The need to change outsourcing suppliers, or bring the IT function back in-house usually only happens with really bad outsourcing agreements.

Q: *We all know people who are bad delegators, who are hands-on everything. As an outsourcing executive, how did you deal with these people if they were the decision-makers?*

A: The tendency to control is common among IT managers. They are accustomed to being into the minutiae of technology, rather than into helping the organization facilitate business decisions. Often, as a result, outsourcing is sold to other parts of the organization, the CFO or the marketing manager, for example, and then dropped in the CIO's lap. A good IT manager has to become much more of a relationship manager, procuring technology rather than developing it all internally. CIOs have to be focused on the management of technology and technology suppliers in the connected enterprise, rather than focused on the technology itself.

Q: *What things should outsourcing companies do that they don't?*

A: A lot of outsourcing companies are focused specifically on the next set of revenues, as opposed to those who will give up some short-term revenue for the sake of a long-term customer relationship. Long-term is the right mindset, especially with the onset of e-commerce, the Internet and the resultant connected enterprise. The pace of business change with mergers/ acquisitions coupled with the pace of technology change demands

SMARTsourcing Co-Sponsor Profiles

SEEC
Tools for Maximizing Information Resources™

Park West One, Ste. 200, Cliff Mine Road, Pittsburgh, PA 15275
T: 412-893-0300 F: 412-893-0147 www.seec.com

Shaping e-Legacies into e-Business™
SEEC, Inc. provides enterprise solutions that help organizations transform and integrate mission critical mainframe systems with e-commerce and new software systems to gain a competitive edge. SEEC's solutions include acclaimed, flexible methodologies, best-of-breed tools and expert consulting services that have saved significant time and money for over 150 Fortune 1000 companies.

SEEC Application Mosaic™ Solution allows organizations to shape their mainframe computer systems into flexible, Web-enabled systems. Application Mosaic leverages and re-uses existing business logic and legacy data, providing more efficient, effective integration with ERP or CRM applications and cutting the time needed to develop web applications. Likewise, SEEC Application Enhancement Solution helps companies right-size and modernize their mainframe-based systems, reducing application backlogs and freeing resources for application migration and Web-enablement projects. It includes proven tools and methodologies that address the entire application enhancement life-cycle. SEEC Euro Workbench™ Solution is a reengineering solution tailored to the unique needs and challenges of the transition to the unified European currency. SEEC also offers a complete range of year 2000 solutions addressing independent verification, renovation and testing of mainframe and client/server systems.

SEEC's services leverage the expertise, process and project management skills of highly-trained consulting specialists to ensure that customers get the most out of the SEEC solutions. SEEC consultants typically supplement the customer's IT staff, ensuring smooth, efficient project completion. Services are delivered on-site and/or off-site (at our technical resource centers in Pittsburgh, London and Hyderabad, India), on a fixed-price or time-and-material basis.

Based in Pittsburgh, Pennsylvania, SEEC was recognized in 1998 as one of the fastest-growing technology companies in the region, with an increasing customer base of large, global organizations. SEEC has direct sales and support offices in North America, Europe and Asia plus sales and services alliances with leading global IT service providers.

Plan to Attend SEEC's Power Breakfast on Tuesday, June 29 at 7:30 am.

Cognizant Technology Solutions

500 Glenpointe Centre West
Teaneck, NJ 07666
T: 201-801-0233 F: 201-801-0243
www.cts-corp.com

Cognizant Technology Solutions Corporation is a leading applications outsourcer that provides software development and maintenance services for Fortune 1000 companies. Cognizant partners with its customers to handle full life-cycle application development projects, and takes full responsibility for on-going maintenance of client systems and legacy transformation. Cognizant's core competencies include legacy and client/server systems, web-centric applications, data warehousing and component-based development.

Cognizant employs more than 1,500 computer science and engineering professionals to successfully manage and solve its customers' software project challenges. Cognizant professionals based at the customer site work as a "virtual" team with their colleagues at Cognizant's software development centers in India, delivering cost-effective solutions within their customers' rigorous time frames.

To ensure that their work is of the highest quality, Cognizant utilizes its ISO 9001 certified QView methodology to define and implement projects; and in December 1998, Cognizant became one of only 18 software engineering organizations worldwide to be assessed at SEI/CMM Level 4.

Using Cognizant facilities, customers can undertake additional projects without investing in new hardware or software and can parallel-process development phases to accelerate delivery.

Cognizant Technology Solutions Corporation is a subsidiary of IMS Health, the leading provider of information solutions to the pharmaceutical and healthcare industries worldwide. Global revenues in 1998 were $58.6 million. Originally formed in 1994 as the in-house technology development center for The Dun & Bradstreet Corporation, the company was named Cognizant Technology Solutions in 1996, when Dun & Bradstreet formed the Cognizant Corporation to provide insight into three fast-growing sectors: healthcare, media and technology. With the continued growth of these sectors, Cognizant Technology Solutions made an initial public offering in June 1998 (NASDAQ:CTSH). In July 1998, Cognizant Corporation evolved into two separate entities: Nielsen Media Research and IMS Health. IMS Health retains a controlling interest in Cognizant Technology Solutions.

Headquartered in Teaneck, New Jersey, Cognizant Technology Solutions now has seven offshore software development centers in Madras (4), Calcutta (2), and Pune (1), India. Cognizant also has sales and business development offices located in Chicago, San Francisco, Toronto, Canada and London, England.

flexibility and give-and-take between customer and outsourcer. Outsourcing companies are much more a part of the virtual enterprise; they should have a stake in the health and well-being of that enterprise over the long haul.

Q: *This supplement is for a show called SmartSourcing. But what about stupid sourcing? What's the biggest mistake firms make when outsourcing?*

A: The biggest mistakes are when companies: 1) go into outsourcing strictly for cost savings, without a full understanding of their business objectives; 2) rush into a relationship because there's a gun to their head, so they don't exercise due diligence and partner with a company that's a good vertical match for them; and 3) sign contracts that are too long-term. In this age of technology, signing a 10-year contract is ludicrous. You may get a price break but not enough to make it worth giving up flexibility.

Q: *Companies are starting to offer outsourcing services for intranets and extranets. How great is the danger that they won't have enough network bandwidth to support the users?*

A: In any outsourcing of intranet or extranet technology, the two major concerns are bandwidth and consistent levels of support. It's not enough just to have the capability to offer bandwidth, you have to offer the ability to handle the variable nature of transaction activity over these kinds of technologies and to support high levels of change with consistent service. Not many outsourcing companies are prepared to consistently offer these kinds of service levels.

Web-hosting is also emerging as a "new" service. It's really just the old service bureau model of 20 years ago—the same package with a new ribbon. If your organization is going through tremendous change, the service bureau model is very difficult. It's a good low-cost way to enter into new technology areas, but the flexibility to change the application through customization is usually not available or is cost-prohibitive. The service bureau model will work for some companies; it's just not a "one size fits all" option, as some marketeers would have you believe.

Q: *Outsourcing desktop service functions is seen as a way to free up IS staff to tackle challenges like the Y2K issue and the euro conversion. Once these challenges are met, will the functions be brought back in-house?*

A: No, everyone is looking at this area. Desktops are a high-maintenance, low-return kind of technology from an IT perspective. While certainly valuable to the business, the kinds of "value add" that internal IT organizations can provide to desktop management is usually much less than can be provided by an outsourcer who specializes in this area. High-maintenance, low value-add? Those are the things you outsource in a heartbeat.

Q: *Is outsourcing the recruiting function primarily a response to a tight labor market? Will it remain popular if the tight labor market ever goes away?*

A: Yes and yes. Back-office functions like recruiting and payroll management are not core competencies for most organizations. So is it likely to continue? Yes it is.

Q: *Got any good outsourcing jokes?*

A: I'm on vacation; outsourcing jokes are the furthest thing from my mind. ■

SMARTsourcing Co-Sponsor Profiles

ORACLE
Consulting

500 Oracle Parkway
Redwood Shores, CA 94065
T: 650-506-7000
www.oracle.com/consulting/

Start With The Right Partner with Market Leading Vision

Oracle Consulting is an industry visionary and at the epicenter of leading-edge thinking about technology and its implications for your business. We have the technical expertise, industry knowledge and applied innovation to turn your ideas into reality. Our deep product development, consulting, support services and education expertise enable us to clearly see your potential opportunities, and build purposeful solutions, tailor-made for your business.

Require the Right Mix of Technical Expertise and Industry Knowledge

Oracle is the world's information management leader. We leverage unparalleled mastery of our products and technology, purposefully applying them for your competitive advantage. With over 15,000 consultants worldwide, our industry experts translate their industry insight into solutions that squarely address your critical business needs.

Reduce Risk and Get Results Through Rapid Implementation

We understand the importance of speed, agility and vision, and we want to take you to your desired destination with minimal disruption to your business. To deliver rapid results, we apply our institutional knowledge to your situation. Oracle Consulting's state-of-the-art library of methods, insights and re-usable code obviate the need for you to recreate every spoke in the wheel.

Deploy for the Future

Oracle Consulting tests the latest in Oracle products to make your adoption of new technology fast and painless. Our dedicated competency centers in applications implementation, data warehousing, electronic commerce, object technology and high-end transaction processing translate our insights into repeatable methods and techniques that shorten your time to benefit. Oracle Consulting exploits our direct link to product development to architect systems that accommodate next-generation technology. This facilitates faster upgrades, and most importantly, secures your position in the technological mainstream over time.

Partner with the Leader in Oracle Technology

Oracle Consulting transforms Oracle technology into solutions that drive business. Through delivery of a comprehensive mix of technical expertise, industry knowledge, and applied innovation, Oracle Consulting provides rapid implementation of complete, integrated solutions that harness the Internet for business innovation.

Let Oracle Consulting show you how we can help your business expand markets, increase efficiencies, and retain customers.

PKS

2398 East Camelback Rd., Suite 1000
Phoenix, AZ 85016
T: 602-508-5300 F: 602-508-5399
www.pksis.com

At PKS Systems Integration, we team with customers to bridge the gap between business strategy and information technology through quality people, proven methods, and advanced technologies. We believe today's IT managers and CIOs understand that challenges like Year 2000, euro conversion, and the IT staffing drought signal a lasting change in IT—one that requires new resourcing strategies. Our recommendation to our customers is to use smartsourcing—not only to overcome their short-term staffing needs, but as a key element of their long-term vision.

At PKS, we recommend classifying your application portfolio into three general categories that account for the emerging commodity nature of many technology services, as well as the changing relationship of IT to business objectives:

- **Critical/core business.** These activities represent the expression of the company's core competency, its strategic competitive advantage: capabilities that must remain unique to the company for the company to remain competitive.
- **Critical/non-core business**. These activities support critical business processes but reflect neither core competencies nor competitive differentiators.
- **Sustaining**. These activities, while important for sustaining business activities, are sufficiently stable and universal (e.g., data center operations, network support, hardware repair) to be treated on a commodity basis.

PKS' Legacy Renewal service. Using Legacy Renewal tools and techniques, PKS will work with your team to transform critical legacy applications and data to client/server or Internet-based equivalents at a fraction of the cost of redevelopment.

PKS' Package Implementation offering delivers everything you need to implement popular ERP packages from SAP and Oracle. We can assist your successful implementation more quickly and less expensively than competing approaches.

PKS' Application Maintenance Outsourcing service brings our talented resources to bear, managing your day-to-day maintenance and production activities, enabling you to reorient key resources toward more strategic activities for a fixed price.

We believe our approach to smartsourcing makes us a valuable partner for projects across your application portfolio. We can not only extend the value of your legacy investment, but also help you adapt your technology portfolio to encourage new business strategies —all while keeping costs manageable. Let us put our experience to work for you.

Consulting | Outsourcing | Development

use IT to improve profits.

How can outsourcing improve your bottom line? Call Keane. We use our rigorous Application Management Methodology and critical performance metrics to strengthen the software management process. The results: Significantly improved productivity, quicker development cycles, lower application support costs and more satisfied users. In short, applications that better support your business. Let Keane move you up the SEI Capability Maturity Model. In doing so, we'll help you gain greater value from IT.

1-888-KEANE-44
www.keane.com

Call for our free
"Moving Up The CMM"
white paper.

KEANE

we get IT done.

Data Warehousing | e-solutions. | CRM Solutions

William Ulrich of Tactical Strategy Group says:

CHALLENGE YOUR OUTSOURCING VENDORS

To fully capitalize on an outsourcing contract, you may need to re-evaluate the factors that motivated your decision to outsource in the first place.

Are you offloading an IT function that has become a headache? Are you seeking multi-year cost reductions? Maybe management wants to refocus on core competencies that no longer include IT. Tactical factors should not be pursued to the exclusion of long-term opportunities. Define how you want to leverage IT and challenge your outsourcing vendors to get there.

Outsourcing vendors offer value beyond lowered aggravation levels and short-term cost savings. Opportunities for leveraging vendor agreements are often overlooked. Consider a five-year maintenance contract, inked in 1996, that shifted support to an outsourcing vendor. Typical service level agreements (SLAs) from that era omitted language dealing with the Year 2000 issue.

As a negotiated solution to this dilemma, one vendor sent systems offshore to be fixed. The code was returned riddled with errors, forcing the vendor into a last-minute remediation project. The client, the vendor and the client's customers were exposed to risks by this short-sighted decision.

You face two key challenges when crafting an outsourcing contract: to anticipate changes in the business and technical landscape and build these changes into the SLA; and to consider personnel issues. Say a company wants to hire consultants to maintain its Cobol systems while launching an in-house project to web-enable key business functions. It makes more sense to build the web-enabling requirement into the maintenance contract and transfer in-house personnel to the vendor's payroll. This approach gives the vendor the skills to maintain the existing systems and the knowledge needed to web-enable the legacy environment. The vendor gains the flexibility and economies of shifting skilled personnel into areas where they are best suited. Meanwhile, a project originally designed to dump a maintenance head-ache now delivers bottom-line value to your company.

Outsourcing vendors can offer tactical and strategic value under a single SLA. Short-term deliverables include re-documented systems, rationalized data definitions, a data warehouse and web-enabled functionality. Long-term value includes redesigning core data structures, transforming architectures into web-oriented environments and replacing legacy systems with packages.

Many vendors segregate outsourcing, ERP, Internet and other services into separate offerings. But creating a comprehensive RFP that integrates a set of requirements should address this issue. If you challenge vendors to provide comprehensive solutions to short- and long-term requirements, they will respond. All you have to do is ask. ■

William M. Ulrich is president of Tactical Strategy Group, Inc., strategic planning consultant, author and co-chair of the BrainStorm Group's SMARTsourcing and YEAR 2000 conferences.

SMARTsourcing Co-Sponsor Profiles

Satyam

1 Chase Corporate Drive, Suite 490
Birmingham, AL 35244
T: 205-982-8780 F: 205-982-8785
www.satyam.com

Satyam Computer Services Ltd. is an international, multi-faceted and totally integrated IT solutions provider.

As a SEI-CMM Level 5 company, Satyam offers a broad range of expertise in Information Technology, including application development and maintenance, systems integration, ERP solutions, e-commerce, year 2000 testing services, Oracle applications, engineering services (CAD/CAM/CAE), web-centric solutions and management consulting.

A solid blend of consulting and IT skills has made Satyam one of the fastest growing IT solutions providers in the world. In just 10 short years, Satyam has built a network of more than 4,300 IT professionals operating out of offices and state-of-the-art development centers in the United States, India, Japan, Singapore, and the United Kingdom.

Satyam's professionals work hand-in-hand as IT partners with more than one hundred clients worldwide, 22 of which are Fortune 500 companies. The company's technical experience extends into developing, implementing and maintaining specific business applications to implementing and supporting enterprise-wide solutions for a variety of industries, including banking, insurance, manufacturing, telecom, healthcare, software and high-tech organizations.

Satyam is one of only ten companies in the world to achieve Level 5 assessment of the Capability Maturity Model (CMM) instituted by the Software Engineering Institute (SEI) of Carnegie Mellon University. CMM-SEI Level 5 is considered one of the most sought after global quality assessments in the software industry. At Level 5, the highest stage, an organization is characterized as continuously improving the range of its process capability and the performance of its projects.

This commitment to excellence is further exemplified by Satyam's trademark way of doing business, known as RightSourcing. The methodologies of RightSourcing are simple, yet effective: Put the right service and the right solution in the right place at the right time. This means IT projects are conducted at the client site, at a Satyam development center or at a combination of both, and are always customized to meet a client's current and future IT needs.

This philosophy and a Level 5 assessment, combined with a worldwide presence and breadth of services, makes Satyam the ideal solution for IT solutions.

Kanbay

6400 Shafer Court, Suite 100, Rosemont, IL 60018
T: 847-384-6100 F: 847-318-1594 www.kanbay.com

Kanbay Incorporated is an information technology consulting firm utilizing a multi-site approach to rapidly deliver high-value systems integration solutions. Founded in 1987, Kanbay is headquartered in Chicago, with offices in Hartford, Seattle, Los Angeles, Denver,London, Hong Kong, Singapore, Melbourne, Nice and Pune, India.

According to founding partner and CEO Raymond Spencer, "Kanbay grew from under $10 million in revenue in 1995 to $36 million in 1998 and now employs more than 700 people worldwide." The management team consists of advanced technology experts with extensive experience in the US, EU, and Asia.

Kanbay Service Offerings

IT Development and Support Outsourcing
Information Technology (IT) Development and Outsourcing enhances efficiency while facilitating the coexistence of legacy and emerging technologies. These services encompass development; customization and personalization; integration; production support; maintenance; and reengineering.

E-Business
We work with clients to define their E-Business strategy and implement interactive solutions that enable them to redefine their relationships with customers, suppliers, and employees.

Enterprise Systems Implementation
Enterprise Systems Implementation services and applications support four main business constituencies: suppliers, operational departments, service departments, and customers. Kanbay has experience with many types of packaged business solutions, but focuses on SAP HR, Oracle and PeopleSoft.

System Compliance and Renovation Projects
Systems Compliance and Project Renovation services include Year 2000 and beyond, EMU, and regulatory changes, plus business risk assessments and systems architecture. Kanbay offers enterprise solutions administered by a team of consultants that covers all core services.

IT Organizational Effectiveness Consulting
Kanbay works with clients to formulate strategies that enable them to thrive and evolve in a rapidly changing world. We focus on aligning corporate strategy with operational initiatives, innovative business processes and the utilization of enabling technologies to empower the business units and people to become more effective.

William Martorelli, Vice President of Hurwitz Group

E-BUSINESS SERVICES

The SMARTsourcing Perspective

William P. Martorelli is Vice President, Application Resourcing Strategies, for Hurwitz Group, Inc., an analyst firm in Framingham, Mass., where he directs the BalancedView Application Strategies Service. This service provides advice on the staffing dimension of application implementation, including skills evaluation and the use of external partners.

The interview below with Mr. Martorelli was conducted by Peter Bochner of Computerworld's Enterprise Business Solutions Unit.

Q: ***To what extent is the popularity of the outsourcing of e-business services being driven by resource constraints caused by the Y2K problem?***

A: A lot of companies are outsourcing one or more aspects of their e-business; the phenomenon is very real. By the same token, with regard to the Y2K question, we at Hurwitz don't see e-business outsourcing being highly related to those resource constraints. What we're seeing is that people are outsourcing the services that make sense, in terms of the functionality they require in light of the necessary equipment and infrastructure cost. Companies are finding that they face significant infrastructure costs and that they can forestall those costs through e-business outsourcing.

Q: ***Is there a type of company that is the ideal or most logical to outsource its e-business services?***

A: No. A lot of big companies have used a variety of e-business services, and a lot of small companies too. The small companies include web merchants who are outsourcing a lot of their e-business capabilities. Smaller companies are looking at end-to-end e-business solutions that may encompass hosting. Larger firms are typically looking at complex website hosting and co-location, but there are no hard and fast rules.

Q: ***Is e-business synonymous with e-commerce?***

A: We at Hurwitz think e-business encompasses more than e-commerce, which is generally thought of in transactional terms. In e-business, we're keeping in mind the breadth and depth of interaction with other systems, including legacy systems, that are part of the broader picture.

Q: ***What's the biggest difference between the paradigm of outsourcing e-business services to that of outsourcing the data center?***

A: There are a lot of differences. When you're outsourcing a data center, you're taking something that has existed for a number of years and farming it out to someone else to handle, whereas in the e-business world you're looking to build up some solutions that either you haven't had at all, or haven't had for a long time. People in the IT outsourcing world have a specific way of looking at things. They think in terms of an existing scope of service that needs to be addressed in the outsourcing relationship, whereas in an e-business relationship things are more open-ended. This difference is significant and holds implications for such issues as contractual elements, SLAs, and pricing mechanisms which are quite different.

Q: ***If a company were going to outsource their e-business services, what is the first thing they should do?***

A: To make sure they understand their rationale for taking that route. What are you

SMARTsourcing Co-Sponsor Profiles

CLARITY CONSULTING, INC.

205 Willow St., Bldg. B South Hamilton, MA 01982
T: 978-468-8080 F: 978-468-0006
www.clarity-consulting.com

Clarity Consulting is a management consulting firm that specializes in devising strategies to respond to IT challenges and emerging market trends. Relying on superior situation analysis, solution formulation and communication skills, we help our clients develop creative solutions to complex issues and capitalize on the opportunities presented by technology. Our international client base includes corporate IT organizations, professional services firms, product vendors and legal and financial services firms.

Our Services

Clarity Consulting provides a wide range of management consulting services to our clients, backed by extensive market and best practices research. To ensure consistent, high-quality results, all services follow our five-step proprietary approach for creative problem solving: Investigate, Interpret, Formulate, Communicate and Facilitate.

While we cover a full range of IT topics, we specialize in: improving IT efficiency, insourcing, outsourcing, Year 2000, IT process redesign, productivity and service level metrics, service offering development, and IT product and service positioning. We also offer a range of writing, presentation and advisory services.

Consulting Services

Our consulting services are tailored to meet the unique needs of each client. Depending on the level of assistance desired, our role can range from advisory to direct participation in a project. We work with clients on location or at our offices in South Hamilton, Massachusetts.

Writing Services

Effective written communication is a critical success factor for almost any business endeavor. Our clients rely on our services for white papers, position papers, brochures, articles, and presentations and speeches.

Speaking and Presentation Services

Often, ideas are only as good as their presentation. Our president, Ian Hayes, is a highly rated public speaker and is available for keynote and conference speeches, executive and board presentations, company meetings, seminars, user groups, workshops, and training sessions.

Advisory Services

Access to informed, expert opinions and research on IT issues, practices, buying patterns and market predictions are invaluable for executives, investors and legal professionals following the IT market. We actively support these professionals through services such as litigation support, due diligence for acquisitions, and financial and market research.

TACTICAL STRATEGY GROUP, INC.

2901 Park Ave., Suite A-2
Soquel, CA 95073
T: 831-464-5344 F: 831-464-5348
www.systemtransformation.com

Businesses have spent much of the past decade trying to retool business processes and corporate infrastructures based on rapidly changing business requirements. Mergers, acquisitions and expanding markets have outpaced the ability of many companies to adapt information technology (IT) environments to these changes. Tremendous strides in hardware capacity and the Internet offered some hope to frustrated executives, but much of this technology has yet to be fully integrated into most organizations. There is a serious need for critical thinking that focuses on how today's information architectures will ultimately be transformed to meet strategic business requirements. Tactical Strategy Group, Inc. is dedicated to meeting these needs.

Tactical Strategy Group, Inc. (TSG) has been providing strategic information planning services to corporations and government entities since early 1990. Our unique offerings include examining large-scale IT environments, assessing future information needs from a business and technical perspective, and assisting with the development of a cohesive transition strategy for client information architectures. While cognizant of the need to leverage new technologies and ERP-based packages, TSG endorses architecture migration options that shun many of the "big bang" strategies that have exploded in the past. TSG service offerings include the development of information transformation strategies with a focus on identifying phased implementation options to meet short-term and long-term needs.

TSG founder William Ulrich is an internationally known consultant, speaker and author on information technology, transformation strategies and business continuity planning. He has co-authored two books and has written hundreds of articles addressing information strategies for companies. Ulrich is also author of a systems redevelopment methodology that facilitates the integration of systems across new and old technologies. With over 21 years in the IT field, Ulrich has helped hundreds of organizations capitalize on the knowledge built into their legacy systems. He has delivered facilitated sessions and business contingency planning workshops to clients around the world. Known as the consultant's consultant, his clients include the world's largest systems integrators, hardware manufacturers and accounting firms as well as many corporations and the U.S. and Canadian federal governments.

Contact TSG at 831-464-5344 or at our email address tsginc@cruzio.com. Or visit our web site at www.systemtransformation.com.

thinking of outsourcing and why? What is the relationship of this particular aspect with the rest of your e-business strategy?

Q: *You note that e-business outsourcing contracts are generally shorter in duration than traditional IT outsourcing contracts. Which side benefits more from this?*

A: The main reason that IT outsourcing contracts are so long is because a lot of the cost relates to the investment required to come in and take over an existing function, such as a data center, and the need to amortize that cost over a number of years. But if you're going to going to move an e-business capability to a hosting capability, the contractual lengths will tend to be much shorter.

On the face of it, the shorter durations would seem to provide more flexibility to the customer, but this is not necessarily true. Lock-ins in outsourcing are not necessarily contractual in nature. For example, any time you outsource something, it's hard to bring it back in-house. Outsourcing e-services can pose the same economic and resource barriers that face any outsourcing customer seeking to bring functionality back in-house.

Q: *What's the biggest danger for a company outsourcing its e-business services?*

A: Like in traditional outsourcing, you're putting yourself in a position where you risk precluding your freedom for future movement. This is particularly challenging in the e-business realm, where things are moving so much faster. It is easy to envision a scenario whereby an e-services outsourcing scenario eventually falls out of tune in terms of the needs of the corporation.

Q: *You say that the potential for spotty customer service exists on the part of web hosting suppliers? How can a company circumvent that?*

A: Some e-business outsourcing companies may not have enough of a mature understanding of what enterprise-class customer service really means. A company's only way of avoiding that is through the traditional means of verifying that a company is capable of doing what it says: reference checking and the formulation of effective SLAs. Also, a company should have a full understanding of the potential for unforeseen charges.■

Hotel Information

A limited block of rooms are available. Please call the hotel directly before May 31, 1999 to obtain the discounted room rate of $189 single/$209 double.

The Fairmont Hotel Atop Nob Hill
950 Mason Street
San Francisco, CA 94108
800-527-4727

Air Travel

Special discounted air fares have been negotiated with United Airlines. This savings can be obtained through our designated travel agency: **UNIGLOBE Action Travel.** Call UNIGLOBE and identify yourself as an attendee to BrainStorm Group's SMARTSourcing Conference & Expo to qualify. Please call **UNIGLOBE at 1-800-322-5585.** When calling United Airlines directly, mention Meeting Identifier Code 574KC.

Cancellation Policy

Early Discount Registrations must be received by May 31, 1999. BrainStorm Group must receive written notice of cancellation by May 10, 1999. Your registration amount will be refunded less $200.00 processing fee. Cancellations after these dates will not be refunded. Substitute registrants from the same company will be accepted.

BUY 3—Get 1 FREE Team Discount Offer: Buy 3 packages and receive one package FREE! This offer can include colleagues as well as your IT outsourcing suppliers in your supply chain. Receive 4th conference package free when you buy 3 packages. All group members must be registered for the same registration package

☐ My Company is interested in becoming a co-sponsor

☐ Keep me on your mailing list about upcoming events

☐ Please send information on your YEAR 2000 National Symposium Series

© 1999 BrainStorm Group, Inc. All Rights Reserved.

Registration Information

How to Register: FAX 508-393-8845 TEL 508-393-3266 WEB www.brainstorm-group.com
MAIL SMARTsourcing Conference & Expo, BrainStorm Group, 386 West Main Street, Northboro, MA 01532
For Questions Call 508-393-3266 **or E-mail:** LOD@brainstorm-group.com

Attendee Information

Name____________________ Title____________________

Company____________________

Address____________________

City____________________ State__________ Zip__________

Internet/E-Mail____________________

Telephone____________________ Fax____________________

Authorized Signature____________________

Please photocopy for additional attendees. *If you have special needs that may require assistance, please call us at 508-393-3266 to arrange.*

Package Information

	Early Bird Discount Until 5-31-99	Regular 6-1 to 6-2199	On-Site 6-22-99 to On-Site
3-Day Conference Package *(Includes Expo Package, Luncheons, Receptions)*	$1095	$1295	$1395
1-Day Conference Package *(Includes Expo Package, Luncheons, Receptions. Please select one day)* ☐ June 28 ☐ June 29 ☐ June 30	395	495	595
SMARTsourcing Bootcamp, June 27, 1999 - 2:00-5:00 pm *(Includes Expo Package and Welcome Reception)*			
☐ Bootcamp only		$345	
☐ Add-on to any Registration Package for an additional		$150	
Expo Package Only, June 28-29, 1999 *(Includes Admission to Expo Floor, Conference Proceedings and Receptions)*	125	175	195

CALL ABOUT
Special Government Employee Discounted Rates

Payment Information

TOTAL PAYMENT $__________ ☐ Check enclosed made payable to: BrainStorm Group- San Francisco

SSF101

☐ Charge my credit card. ☐ AMEX ☐ VISA ☐ MasterCard ☐ Discover

Account No.____________________ Exp. Date__________

Cardholder Name____________________

Signature____________________

San Francisco June 28-30, 1999 ◆ Chicago September 22-24, 1999 ◆ New York October 1999

Still Managing Your Own IT Systems?

Start SMARTsourcing

Attend BrainStorm Group's SMARTsourcing Conference to formulate winning strategies and gain insight from industry thought leaders on the latest developments and advantages of IT Outsourcing.

Web: www.brainstorm-group.com | Tel: 508-393-3266

SMARTsourcing
CONFERENCE & EXPO SERIES

New Orleans • March 29-31, 1999
San Francisco • June 28-30, 1999
Chicago • September 22-24, 1999
New York City • October 1999

Produced by BrainStorm GROUP, INC.
Conferences and Event Management

Series Co-sponsors

- Aberdeen Group
- Andersen Consulting
- Bianco Hopkins & Associates
- Cognizant Technology Solutions
- Computer Horizons
- COMPUTERWORLD Careers
- Corio
- CSC
- Cutter Consortium
- EAI Journal
- Earthweb
- Enterprise Systems Journal
- Evolving Enterprise
- Giga Information Group
- Hexaware Technologies
- Hurwitz Group
- IMRglobal Corp.
- InfoServer
- Intelligroup
- Kanbay Corp.
- KEANE
- MERANT
- Mercury Interactive
- Millennia III
- modis Solutions
- Oracle
- PeopleSoft
- PKS Systems Integration
- PricewaterhouseCoopers
- RCG Information Technology
- Sapiens Americas
- Satyam Computer Services
- SEEC
- SOFTWARE Magazine
- Solutions Integrator
- Strategia
- Triaxsys Research
- Unisys
- Viasoft

Web-Based Groupware

BY CARLA CATALANO

DEFINITION

Web-based groupware is a set of software tools that runs on a Web browser. It allows users in different locations to work together on projects from their desktops. Users can work individually and then pass the project to a teammate. They can also work together to edit reports; view detailed drawings at the same time; share databases, files and calendars; and conduct live electronic meetings.

WHETHER your organization spans across continents or just the stairwells of a building, Web-based groupware provides tighter workflow for organizations with geographically dispersed workgroups.

Trying to get all the right people together at the same time is nearly impossible and a costly task, says Lewis Ward, research associate at Collaborative Strategies LLC, a management consulting firm in San Francisco.

With today's global work environment, Web-based groupware is a way to work around the clock without exhausting employees.

"Twenty-four by seven is fast becoming the preferred project work schedule for large organizations," says Hadley Reynolds, an analyst at The Delphi Group in Boston. For example, a team member in California transfers a project to a colleague in London, who works on it while the Californian is sleeping, he explains.

Web-based groupware is only a few years old and still has a ways to go before it reaches maturity, says Carl Howe, an analyst at Cambridge, Mass.-based Forrester Research Inc.

In addition to Web-based groupware, there's groupware based on client/server computing, which means software such as Notes needs to be installed on every workstation.

But with Web-based groupware, the user goes through the Internet. This allows the user to gain access to applications with any computer as long at it has a Web browser and the user has a password.

Some user companies have tried to use a simple e-mail package to collaborate with colleagues around the globe but have found e-mail doesn't offer all the features of a true groupware product.

"Web-based groupware is a significant step forward from [e-mail] systems," Reynolds says. "E-mail doesn't have a collaborative electronic workspace and this frustrates sharing efforts within an organization." Today's employers want to provide a common electronic work space where employees can collaborate on projects regardless of their office locations, time zones, travel schedules or "flex hours," he adds.

Other groupware products may not have the benefits of a Web-based product. Web-based tools make it easy to distribute to collaborative environments, says Ian Campbell, an analyst at International Data Corp. in Framingham, Mass. Many companies outsource projects, so if you're looking at a groupware product without Web capabilities, "you're shortchanging yourself," he adds.

You don't need to worry about compatibility issues either. With a Web browser and an Internet service provider such as America Online Inc., you can set up a virtual meeting or project-sharing space with anyone no matter what operating systems they're running. This enables companies to "focus on collaboration rather than technology," Campbell says.

But, before you choose a Web-based groupware product, determine whether you want to collaborate within the organization; branch out to business partners, suppliers and customers; or reach the public, Howe says.

The object of Web-based groupware is to help distributed companies organize and manage projects collaboratively. The bonus is that it streamlines how teams interact and collaborate to reach goals. ◗

Catalano is a freelance writer in Holliston, Mass.

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

AT A GLANCE

Look Before You Leap

Some things you need to think about before diving into any Web-based groupware product:

Strategy: Know your corporate IT strategy - especially your Internet strategy

Technology: Leverage the technology you have

Organizational design: Know your users. Some work remotely, some work disconnected while on airplanes, many are in different time zones

People and psychology: Entice your users to work together. Use incentives to make groupware a positive way to work

SOURCE: KINETIC INFORMATION, WALTHAM, MASS.

MOREONLINE

For more information about Web-based groupware, visit our Web site.
www.computerworld.com/more

Q&A

Implementing and Maintaining Web-Based Groupware

Premo LLC, a company that deals in the environmental management of properties, uses IntraActive Inc.'s InTandem.

Shek Jain, principal at the Atlanta-based company, recently talked to *Computerworld* about his company's experience with the Web-based groupware package over the past six months.

What do you use InTandem for?

It's the primary communication, collaboration and information management tool within our organization. We use InTandem to track and manage identified environmental concerns. We inform real estate investment fund managers, insurance underwriters, lending institutions [and others], of all developments that could potentially impact their assets. Using InTandem enables us to provide instant access to critical technical and legal documents and enables us to schedule and develop projects collaboratively with those parties.

What are the benefits of using InTandem?

It enables us to exchange information globally with our customers. InTandem's robust search engine enables interested parties to gain instant access to all portfolio information whenever and wherever they need it. This is especially useful given the international nature of many of the properties that we manage. InTandem was an out-of-the-box solution for us - which required little financial commitment, especially compared with expensive customized products.

How much did it cost?

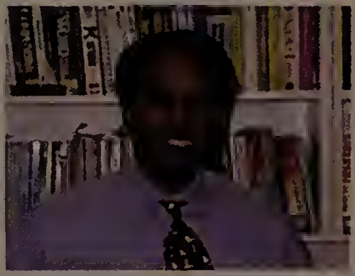
We pay $19.95 per user, per month [no setup fee]. This includes standard support and automatic upgrades. Our customers can buy InTandem to install in-house, in which case the price is $95 per user.

Why Web-based groupware?

Strategically managing hundreds of properties requires constant daily collaboration with several diverse parties. Because so many are involved regularly in our business, we needed a system that was securely accessible to many people in many different locations. It's difficult to schedule meetings, conference calls and send information to people who are constantly traveling. Web-based products provided the global information exchange we were looking for.

How did you collaborate before using Web-based groupware?

We e-mailed to groups or used overnight couriers, which was incredibly cumbersome, slow and less secure. We are convinced that when several people need information quickly, Web-based groupware is the best way to communicate.



Premo's Shek Jain uses InTandem to exchange data globally

What are the downsides to using Web-based groupware?

There is a small downside - namely security. Although InTandem sits on an Oracle-based platform, which means it is very difficult to hack in to, a virtual network that is accessible from anywhere is generally easier to break in to than a network that is accessed locally [no dial-in access software].

Encryption technology add-on software is available to enhance security, although it is only necessary in extreme situations. ◗

Easier does it for Java Tools

Visual Café and PowerJ show progress in smoothing Web-to-database connections

By Kevin Barnes and Garrett Michael Hayes

VISUAL CAFÉ 3. Pros: Intuitive wizards for code-free projects and live data-bound components. Cons: Forms can get jumbled with invisible components, and customizing component properties isn't always intuitive

SYMANTEC.
Visual Café for Java
Powerful Java Tools That Work the Way You Do
Professional Development Edition

AN EVER-GROWING number of Web site developers are connecting their Web front ends to database back ends for a much wider variety of reasons than the traditional order processing and record lookup applications. Java's relative simplicity, portability and cross-platform nature is enabling companies to create those applications more quickly and with somewhat less effort. Java applets have become one of the most popular methods for building that connectivity. However, as with any new tool, there's a sometimes painful learning curve or workload for the developers.

To see how building Java applications may be getting easier, *Computerworld* and Client/Server Labs Inc. in Atlanta worked with Visual Café from Symantec Corp. in Cupertino, Calif., and PowerJ from Sybase Inc. in Emeryville, Calif. — two packages that claim to enable users to develop Web-to-database Java applets with little or no programming. What we found indicates that those claims may come surprisingly close to the truth.

Development with absolutely no manual programming may not be here yet, but the tools we examined automate the bulk of creating usable and useful Java applications. Although these tools can produce workable e-commerce sites, they're better suited for applications with a limited life span or projects where it doesn't make economic sense to invest heavily in a custom development effort.

PRODUCT REVIEWS

The tools make connecting with and retrieving data from a database very simple. Although the creation process is easy, the performance of these codeless applications wasn't stellar. The tools could be aimed at novice developers, but developers aren't going to find much help looking at the code. While PowerJ does a better job than Visual Café at documenting code, it's definitely not an educational tool.

Test Highlights

Overall, we found Visual Café's setup more seamless and intuitive. By comparison, PowerJ allows for much more customization in the setup process. Both environments allow for quick, nearly codeless generation of database applications. Visual Café comes much closer to that ideal of creating and deploying a robust database project without any coding. PowerJ, on the other hand, requires minimal coding to complete a project, but the wizards, which allow for on-the-fly customization, may be enough for some to overlook that manual effort. And with both tools, access to the code behind the wizards is a click away if you feel the need to look around.

Because our goal was to test

Java Tools, page 109

THIS IS STORAGE

IBM

Emergency. | Doctors quickly pull up medical history on interhospital network. Warning: ceftriaxone antibiotic allergy.

Why rethink storage? | In the world of e-business, more people are counting on your data, both inside and outside your company walls. And if it's used to make decisions critical to your company's (or anyone else's) health, it had better reside someplace safe, yet accessible.

How IBM storage can help you. | Network Storage Manager, an integrated disk and tape solution, features award-winning ADSTAR Distributed Storage Manager (ADSM) software for automated backup and fast recovery of distributed data across major platforms. Disk, tape or optical, serial or fibre-based connectivity, nobody offers a wider range of storage tools, software and services.

Make the most of your data: www.ibm.com/storage/tools

e-business tools

[illegible] Machin [illegible] in the U.S. and/or other countr[illegible] Other company, product [illegible] be the [illegible] IBM Corp. [illegible]

There's one compelling reason to let us handle your **e-business**.

e-bandwidth.

Most communications companies selling e-commerce solutions have one problem: they've been around a while. So, their networks may lack the bandwidth to maximize your IT investments. We've got one of the world's fastest Internet Protocol (IP) networks, one with bandwidth to spare. Put your e-business into overdrive. Visit our Web site at **qwest.com** for the bandwidth to change everything.

ride the light

Qwest.

Java Tools

Continued from page 106

the simplicity of building and deploying a database applet, we set ourselves a fairly straightforward task. Using the database from the Client/Server Labs RPMark '95 benchmark, we developed some elementary database queries, such as those that might be used in a decision-support environment.

PRODUCT REVIEWS

We were testing primarily for ease of use rather than performance, so we chose to run the database, Web server and development tools on a single Dell Computer Corp. PowerEdge 2200 server running Windows NT Server 4.0, with Service Pack 4. Microsoft Corp.'s SQL Server Version 6.5 was used as the database engine, and Microsoft Internet Information Server Version 3 hosted our Web staging. Although both tools let you use your choice of Java Development Kit — 1.02, 1.1 or the latest Version 1.2 — we used JDK 1.1 to ensure compatibility with most Web browsers' virtual machines. We ran the applet on both Netscape Communications Corp. and Microsoft browsers without any compatibility problems.

Both packages provide out-of-the-box database connectivity using Java Database Connectivity (JDBC). Several JDBC options are possible, including Java's native JDBC-Open Database Connectivity (ODBC) Bridge or a JDBC middleware server such as Visual Café's dbAnywhere Server or Sybase's Adaptive Server Anywhere. Another option is to use one of the many proprietary JDBC drivers. For our test, we opted to use Sun's JDBC-ODBC Bridge.

Essentially, the JDBC application programming interface was created to ease the burden of connecting and communicating with databases. Both products take this a step further by making the process codeless. In essence, you drag the database you want to use onto your project, and a connection is made.

Both vendors also provide database connection and navigation tools for testing, troubleshooting and viewing database sources. Those tools saved us time during the development process by allowing us to look at each data source's respective views without opening an individual database schema manager.

Creating Your Applet

The installation process varied greatly between the two products. Visual Café installation went smoothly — we were ready to build our applet within minutes of opening the box. Though we were extremely pleased with Visual Café's install, PowerJ's tedious and cumbersome install soured us. PowerJ does include a richer install, but that necessitates a install process for each tool set, which is overwhelming to developers wanting to set up simple installation.

One of the first things we noted was that each product approaches project setup in much the same way. After you choose either a Java applet or an application-based project — in our case an applet — a wizard walks you through the steps of connecting to a data source, choosing a table and corresponding columns and customizing your displayed results set. In both cases, the hand-holding wizards lived up to the vendor's claims of codeless projects. During this process, the wizards create projects for you with forms that contain components like tables and tool bars and also several hidden ones like database connectors, navigators and transaction and query objects.

After deciding on your type of project, both tools provide a database wizard to set up a data source for it. Next, you choose a table and the corresponding columns you want to work with. Finally, you choose how you want the data represented on the form, and you're done. The wizards have established a connection with the database and created a form with your database-bound components. At this point, the project can be executed — a user could use the project as is to view, add and delete records. This process is relatively short and straightforward.

Each tool offers different features for assisting you during this setup process. Visual Café, for instance, provides a Master-Detail Editor that simplifies the defining of new database relationships based on existing tables.

PowerJ's Query Editor, essentially a SQL wizard, is a similar utility to Visual Café's Master-Detail Editor. Though the Query editor isn't as elegant as Visual Café's Master-Detail Editor when it comes to performing joins, it's handy for constructing lengthy, unruly queries. It presents a logical, easy-to-follow process for building queries — you choose the table, columns and how you want the results ordered or grouped. When it came to simple queries, we found the Query Editor to be overkill — we found it easier to just enter the SQL by hand rather than wade through the choices presented by the Query Editor.

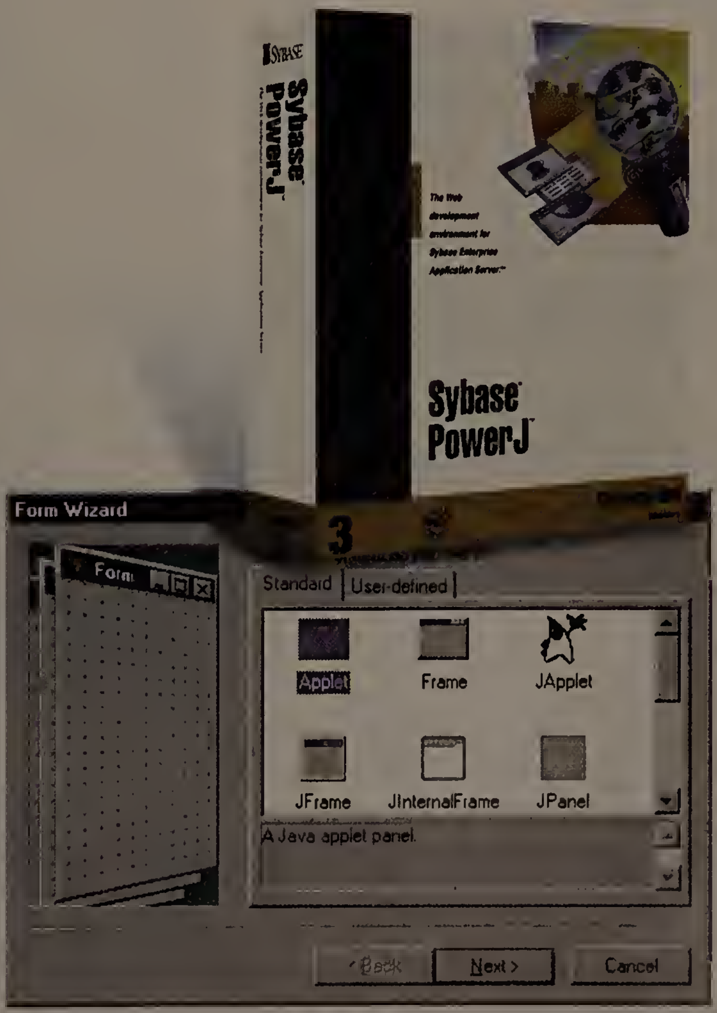
There are notable differences in the way the two tools allow you to represent the data in your project.

To set up a table view in PowerJ, you need to build a DataWindow object, which involves a little more work. This involves creating a PowerBuilder library, creating a database connection for the DataWindow, selecting a table and corresponding columns and editing the table format. After adding the DataWindow to your form and associating it with the new PowerBuilder library, some trivial coding is required to retrieve and update database records.

In Visual Café, check boxes take the place of the coding. A component like the DataWindow exists in the Visual Café DatabaseWizard and doesn't require coding to retrieve data. However, PowerJ's DataWindow has a richer presentation than Visual Café's JTable.

Overall, the Sybase wizards tended to be longer and a bit more verbose than those found in Visual Café. That's because PowerJ allows you to name the connection and transaction objects as you step through the wizard. We found this configurability unnecessary and a bit confusing. The wizards in Visual Café had a much simpler feel. In both environments, we found ourselves searching for the right wizards while accidentally accessing other wizards we didn't intend to. Both tools can benefit from easier access to wizards once the project has been created. ◗

Hayes is systems control manager, and Barnes is a test engineer at Client/Server Labs Inc., a primary partner with Computerworld.



SYBASE POWERJ 3.0. Pros: Rich customization, SQL query editor and a powerful, flexible data window. Cons: Cumbersome installation, and wizards can be too complicated

IBM Fashions The Floppy

BY MARY BRANDEL

IT'S IRONIC that the diskette — the 3.5-in., magnetic storage device that's ubiquitous in the computing world today — is a direct descendant of an 8-in. cousin more closely associated with mainframe data centers.

In fact, the floppy disk was developed in 1971 to solve a problem IBM faced with its System 370 computer: Its operating instructions were stored in semiconductor memory, which got erased whenever the computer was turned off. "If you wanted to restart the computer, you had to reload the control program into memory," says Al Shugart, then product manager for direct-access storage devices at IBM. He later founded Shugart Associates and storage vendor Seagate Technology Inc.

1971

In 1967, the storage group at IBM's San Jose Laboratories was charged with developing an inexpensive device to store and ship microcode for mainframe processors and control units. The device had to cost under $5 to be replaceable, had to be easy to ship and needed unquestionable reliability.

But though Shugart is often credited with inventing the floppy, he's the first to cite David Noble as its true developer. Noble was a senior engineer at the San Jose Labs, and he shouldered the burden as a one-man team with Shugart's oversight.

FLOPPY PIONEER AL SHUGART: The development of a protective jacket for the disk was what finally "made the thing go"

At first, Noble tried using existing technologies, such as magnetic belts, which are disks similar to those in dictating machines and phonograph records. But it soon became clear that he'd have to start fresh. That's when he proposed the floppy disk.

Within a year's time, Noble — now working with a larger team — completed work on what IBM called the "memory disk" — the diskette. It was a read-only, 8-in. plastic disk coated with iron oxide, weighing just under 2 oz. and capable of storing about 80K bytes. A crucial point in its design was the creation of the protective enclosure. "We had this floppy disk running, but it wasn't in an envelope [plastic jacket]," Shugart says. "The contamination just killed you. Error rates were too high."

So the jacket was lined with a nonwoven fabric that continuously wiped the surface of the disk as it rotated to keep it clean. "That made the thing go," Shugart says.

After passing extensive tests, the floppy was incorporated into the System 370 in 1971; it was also used to load microcode into the controller for IBM's Merlin 3330 disk pack.

But the floppy that emerged in 1971 wasn't the design that became the industry standard, says Jim Porter, now president of Disk/Trend Inc., a market research firm in Mountain View, Calif. At the time, Porter worked at Memorex Inc., an independent manufacturer of floppy disk products.

In 1973, IBM released a new version of the floppy, this time on the 3740 Data Entry System. "The recording format was completely different, and the motor spun in the opposite direction," Porter says. It had read/write capacity and stored 256K bytes.

Users could now enter data onto diskettes rather than punch cards. IBM bragged that the disk could hold as much information as 3,000 punch cards.

After that, the floppy disk market took off. Today, there are still companies that use the 8-in. floppy disk. But that form factor was overshadowed in 1976 with the development of the 5.25-in. floppy, which emerged around the time that personal computing was hitting the scene.

As Porter tells it, Wang Laboratories Inc. wanted to release a desktop computer for word processing and felt the 8-in. size was too big; it started work with Shugart Associates to produce a smaller disk. "One night at a dark bar in Boston, they finally agreed what size the diskette would be. It was a cocktail napkin on the table, which is 5.25 in.," Porter says. "They brought the napkin back to California and told the engineers, 'We really don't know if there's a market for this, but we want you to build a diskette this size.' "

That design eventually gave way to the 3.5-in. diskette, developed by Sony Corp. in 1981. Today, even the 3.5-in. diskette is showing signs of decline, as higher-capacity storage mechanisms such as CD-ROMs and Iomega Corp.'s popular Zip drives take over. Still, the emergence of the floppy went hand-in-hand with the PC revolution — and helped usher in the era of computing with which we are familiar today. ◗

Brandel is a frequent contributor to Computerworld. *Contact her at brandel@cwix.com.*

Technology Happenings

- Intel develops the **4004 microprocessor.**
- Niklaus Wirth develops **Pascal.**
- The Japanese government begins giving the **Japanese computer industry subsidies** to encourage research and development and to help make the companies competitive in the international market.
- Poketronic, one of the first **pocket calculators,** is introduced in the U.S.
- MIT's Terry Winogad develops **AHRDLU,** a program that combines language parsing, problem solving and natural-language response.
- Don Hoefler, a California journalist, dubs the valley southeast of San Francisco **"Silicon Valley"** because of its proliferation of technology companies.

Born in 1971

◀ **Marc Andreessen,** Netscape co-founder

- **Tupak Shakur,** rapper and actor; murdered in 1997
- **Noah Wyle,** *ER* actor

In Space

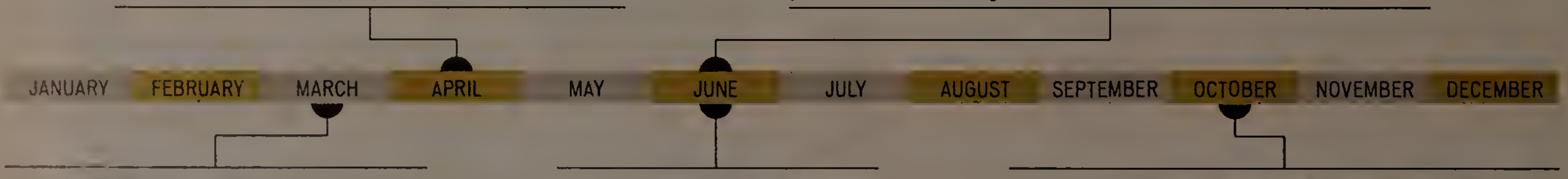
- **February:** *Apollo 14* lands on moon.
- **May:** The Soviet Union launches a spacecraft toward Mars. It contains the first capsules to land on the planet.
- **June:** The Soviet *Soyuz XI* mission ends in tragedy: Three cosmonauts are found dead inside the spacecraft.
- **July:** *Apollo 15* is launched for an exploratory mission on the moon. Astronauts ride in an electric car.
- **December:** An unmanned Soviet capsule sends back signals from Mars.

Other Notables

- ***All in the Family*** debuts on CBS.
- **The Nasdaq Stock Market** is established. It's the world's first electronic stock market.
- Singer **Jim Morrison** of The Doors dies in Paris at age 27.
- President Nixon nominates **Lewis F. Powell** and **William H. Rehnquist** to the U.S. Supreme Court.
- **Walt Disney World** opens in Orlando.
- **Best Picture:** *The French Connection*

The U.S. Supreme Court upholds the use of busing to achieve racial desegregation in schools.

***The New York Times* begins publishing the "Pentagon Papers," a secret study of America's involvement in Vietnam.**



Army Lt. William L. Calley Jr. is convicted of murdering at least 22 Vietnamese civilians in the My Lai massacre.

U.S. and Japan sign agreement to give control of the island of Okinawa to Japan.

North Vietnamese Premier Phan Van Dong says his government is ready to accept a cease-fire as the first step toward settlement of the conflict in Vietnam.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

JavaOne℠
Sun's 1999 Worldwide Java Developer Conference*

JUNE 15–18, 1999
MOSCONE CENTER
SAN FRANCISCO

Attend JavaOne℠, Sun's 1999 Worldwide Java Developer Conference℠

Immerse yourself for four days of cutting-edge technical information and emerge with powerful skills and key industry contacts. Join Java software developers from around the globe as they converge on San Francisco for the **JavaOne**℠ conference.

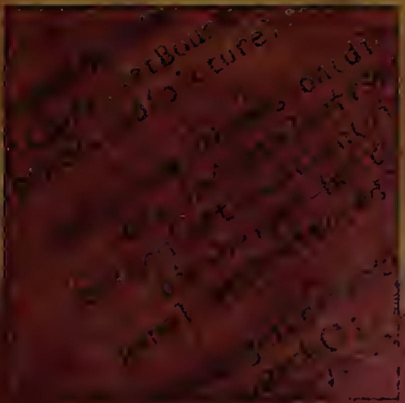
Now in its fourth year, the **JavaOne** conference has established itself as the cornerstone for network computing innovation. It is the must-attend event for those who develop and deploy powerful Java applications. Technology creators, leading software and tools vendors, and today's most innovative users gather to teach and learn at the **JavaOne** conference.

Capitalize on the unlimited opportunities created by the interconnection of people, devices and software. Leverage the power of Java technology to streamline, extend and innovate your enterprise; tap the potential of the network, cross-connect heterogeneous systems and create portal-based application systems. Hear significant advancements from industry leaders. Exchange real-world success stories with your colleagues. And evaluate the newest Java technologies–Java™ 2 and Jini™ – in action.

Java™ technology is your advantage.
The JavaOne conference is your world. Register today.

IMMERSE YOURSELF...
FOUR FULL DAYS

LIVE
BREATHE
EAT
DRINK
PLAY
LEARN
JAVA™ TECHNOLOGY



Go to http://java.sun.com/javaone/

[illegible]
CW2D:HXV

Objects of Desire

Although Smalltalk and C++ are integral languages, Java is increasingly becoming hiring managers' object of affection

By Fawn Fitter

IT'S ALMOST A CLICHÉ to refer to the job market for a particular IT skill as white-hot — but in the case of object-oriented programming skills, it's an understatement.

Object languages like Java, C++ and Smalltalk have become the common language of programming in almost every industry, particularly traditionally information technology-heavy fields such as banking, telecommunications and insurance. As a result, opportunities abound — not just for professionals who already have those skills, but also for people looking to acquire them.

Just about the only field not going wild for objects is the very small embedded systems area, in which people have traditionally been concerned about minimizing space, says Alan Knight, chief architect at The Object People, a consulting and training firm in Ottawa that specializes in object technology. Even in embedded systems, he says, firms are moving toward object languages.

"It's ceased to be a narrow special-interest area and is now underpinning a lot of computing," Knight says.

WILLIAM MERCER MCLEOD

VIRTUAL VINEYARDS' Cyrus Khoshnevisan hires self-taught Java programmers who have C++ experience

Hiring managers agree that the object language most in demand is Java. That's largely because Java is evolving quickly and facilitates the ever-popular move toward browser-based interfaces. Equally important: Someone with a background in the more complex C++ can learn Java in just a few weeks. At Palo Alto, Calif.-based online wine vendor Virtual Vineyards, for example, director of engineering Cyrus Khoshnevisan has hired primarily self-taught Java jockeys who have C++ experience. Virtual Vineyards uses new Java technologies like servlets to personalize the Web site for individual customers and keep pricing and inventory information constantly updated.

C++ itself is still a sought-after skill, especially for employers like Fatbrain.com Inc., an online computer book retailer that uses C++ as the glue that holds its acclaimed Web site together. Co-founder and chief technology officer Kim Orumchian says he needs programmers who can use the high performance of C++ to prepare and upload large amounts of data.

Smalltalk, the oldest of the object languages, seems to be losing ground to its two offspring. Although companies still use Smalltalk, hiring demand has dropped considerably. In Silicon Valley, at least, requests for programmers with Smalltalk experience have dwindled rapidly during the past two to three years, says Bill Baloglu, founder and chief technology officer at ObjectFocus Inc., an object-oriented consulting and contracting firm in Cupertino, Calif.

Credit the explosion of the Web for the dramatic growth in the object-language job market. Companies are hot to explore Web-based applications, especially e-commerce.

Browser-enabled user interfaces are another use for object languages. Companies build Java applets to provide user-friendly access to legacy systems via application servers that have Object Request Brokers. Service Merchandise Co. is one example of a company making broad use of object languages — in this case, Java.

Money Is No Object

U.S. regions that pay the highest salary premiums for the following object language skills:

JAVA	C++	SMALLTALK
Mid-Atlantic	E. No. Central	New England
South Atlantic	South Atlantic	Mountain
W. No. Central	Mountain	Pacific

Objects of Industry

Top nonmanufacturing industries reporting employees who have or are using the following object skills:

JAVA	C++	SMALLTALK
Business services	Transportation	Business services
Financial	Education	Financial
Health care	Financial	Business services (non-IT)

SOURCE: *COMPUTERWORLD'S* 1998 SKILLS SALARY SURVEY

Senior Vice President and CIO Ken Brame reports that in addition to allowing customers to order via the company's Web site, Service Merchandise uses Java applets on its extranet and intranet to connect with vendors and employees. That helps the company find optimal shipping methods, for example, and automatically generates e-mail that gives preferred shippers the opportunity to bid on deliveries.

As with many IT skills, the career path in object languages leads from designing subcomponents to implementing entire mission-critical systems. Salaries range from $50,000 per year in low-level positions outside the high-tech hot spots to $120,000 and up for experienced high-end engineers in New York and San Francisco.

Given the demand and pay, plenty of IT professionals are acquiring those skills either by taking classes on their own or by asking for on-the-job training. And though companies are retraining current employees to meet the need, they're finding retention difficult, given the lure of other opportunities.

"We think it makes sense to give our internal staff the opportunity to learn this hot new technology," Brame says. "Unfortunately, once they've been trained, it's harder to hold on to them. The first three people we trained left the company."

The most valuable object-language professionals have skills beyond the particular language. Database design and analysis, client/server and soft business skills, as well as an awareness of the industry, increase an IT worker's value. Hiring managers say they want to see applicants with experience designing applications, particularly those that handle high-volume transactions, not just theoretical background.

"I want to see people who can use the tools to solve the business problem," Khoshnevisan says. "Even if I'm hiring a Java programmer, I'd rather see someone who's finished a C++ job that went into production than someone who's done a prototype in Java that was never produced."

After all, programmers who know how to design, develop, test and integrate an application are the ones with the long-term career prospects. Those skills will transfer to the next hot technology. ◗

Fitter is a freelance writer in Boston. Contact her at fsquared@netcom.com.

Information Services Analyst: Job Duties: Analyzes user requirements, procedures, and problems to automate processing or to improve existing computer system and applications in multi-tier environment, including developing and applying component objects. Confers with personnel of organizational units involved to analyze current operational procedures, identify problems, and learn specific input and output requirements, such as forms of data input, how data is to be summarized, and formats for reports. Writes detailed description of user needs, program functions, and steps required to develop or modify custom applications related to Mineral Management Service permitting process and business forecasting of variable factors in oil and gas development. Reviews computer system capabilities, workflow, and scheduling limitations to determine if requested program or program change is possible within existing system. Studies existing information processing systems to evaluate effectiveness and develops new systems to improve production or workflow as required. Prepares workflow charts and diagrams to specify in detail operations to be performed by equipment and computer programs and operations to be performed by personnel in system. Prepares time and cost estimates for completing projects. Directs and coordinate work of other to develop, test, install, and modify programs. Salary: 54,500 per year. Hours: 40 hours per week; 8:00 a.m.-5:00 p.m. Education Requirement: Master of Science in System Science or Computer Science. Contact: Louisiana Office of Employment Security, Job Order 1680391; 1530 Thalia St., New Orleans, LA 70130-4426

BUSINESS SOFTWARE ANALYST: Business Software Analyst to study, review and analyze business processes to determine feasibility of implementation of PeopleSoft Enterprise Resource Planning computer software. Confer with personnel of all functional business units to analyze current operating procedures and prepare business processes for all functions of business operations including financial management, accounts payable, accounts receivable, inventory, order entry, payroll, benefits, etc. Conduct fit gap analysis to determine if existing business operations can be mapped into PeopleSoft or if customizations to PeopleSoft are required to conform existing operations. Design changes to existing business systems to conform to PeopleSoft or customize PeopleSoft to conform to existing systems. Also responsible for datamapping, data conversion, testing and building and reviewing prototypes. Requirements: Bachelor's Degree or equivalent in Business Admin., Accounting or related field and five years experience in Accounting, finance or, other management or support position, knowledge of PeopleSoft Enterprise Resource Planning Software. Salary: $57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Greg Schwing, Mon Valley Job Center, 345 Fifth Ave., McKeesport, PA 15132, Job No. 6025424.

Systems Analyst. Plan, develop and test computer programs and systems for advanced data communications, database management and technical applications using Powerbuilder and other advanced software tools. Write documentation to describe program development, logic, coding and corrections. Develop software to deploy & upgrade complex client/server applications. Req: Bachelor's degree (or equiv.) in Computer Science or Field of Engineering + 2yr. work exp. in job offered or 2 yrs. exp. as Programmer/Analyst or Software Programmer. Must have 2 yrs. work exp. w/ DB2 database mgmt. Software. Applicants must have proof of legal authority to work in the United States. Job/Interview site: Overland Park, Kansas. Salary $45,547/yr.; 40 hrs./week, plus $23.05/hr. overtime. Please apply with a resume in hand to any local Kansas Job Service Career Center or send the job resume to: KS Department of Human Resources (#KS9999930) Attention: Jane Burbridge; 401 SW Topeka Blvd.; Topeka, Kansas 66603-3812.

COME TO THE CAROLINAS

Be in good company at **Blue Cross and Blue Shield of South Carolina**. Due to rapid growth, we are currently accepting resumes for positions in our **Columbia, SC** offices:

- **Mainframe Programmers/ Project Leader**
  COBOL, CICS, DB2/IMS, JCL, VSAM
- **CICS/DB2/IMS Systems Analyst**
- **CISCO Supervisor**
  CISCO Routers, HUB & Switches, ATM, Ethernet, Token Ring
- **Enterprise Network Engineer**
  UNIX, AIX, Network Analyzers, TCP/IP, FDDI, ATM
- **TAO E-Mail Administrator**
  Cobol, VSAM, DB2, CICS, TAO 4
- **CICS/DC Support**
  CICS, MVS, System Support
- **Electronic Commerce Programmer**
  CICS, COBOL, LAN/WAN, ANSI-X12/EDI
- **Web Designer**
  HTML, Java, Netscape/Explorer, TCP/IP, Lotus Notes, Cold Fusion

We offer a competitive salary, flexible benefits program, relocation benefits, & an excellent career development opportunity.

CALL, SEND, FAX OR E-MAIL RESUME TO:

I/S Recruiting
Blue Cross and Blue Shield of SC
I-20 East @ Alpine Rd.
Columbia, SC 29219
TEL: 800-288-2227 Ext. 45596
FAX: 803-419-8096
john.stoughton@bcbssc.com
EOE/M/F/D/V

A WORLD OF OPPORTUNITY

Your technology career may have just begun. Or you may be an experienced software professional. What you need is a company that offers you diverse opportunities in technology services and project management, while keeping you from getting technically obsolete. That company is Mastech!

Mastech represents global opportunity with a fast-track company that promotes opportunities in our consulting practice ranging from project management to client server based system development. If you have proven IT skills, and are interested in a challenging position working to support some of the world's largest organizations, we may have just the opportunity for you.

Client Server
- Unix System Admin
- Object Oriented Devel
- NT System Admin

Applications Solutions
- Project Managers
- Prog Analyst Cobol, Database

Network Services
- Architecture
- Security
- Network Management

Internet/Intranet
- Java HTML
- EDI
- eCommerce

ERP
- CIM
- Oracle Apps
- PeopleSoft
- SAP
- JD Edwards

Join one of the industry leaders in IT Services with revenues over $400 million. Mastech has been recognized by Inc. magazine as one of the fastest-growing privately held companies four times. Now a public entity, our client base spans over 900 companies including EDS, IBM, GE, Cummins Engine and Ernst & Young, who rely on our expertise to achieve their goals. We are looking for dynamic individuals to play an integral role in supporting the growth of our consulting efforts.

Mastech provides a compensation plan structured to encourage and reward top performers and a full benefits program. Please send your resume and salary history to: **Mastech Corporation, Attn: North American Recruitment, Fax: (412) 490-9861; Ph: 1-800-627-8323, ext.9606. E-mail: ExploreTheWorld@mastech.com.** EOE.

MASTECH

www.mastech.com

Computer

LAN ADMINISTRATOR

Lockheed Martin Technology Services, Network Support Program, is currently seeking an experienced LAN Administrator for our remote facilities at Diego Garcia and Guam. Responsibilities include providing LAN administration under the Network Support Program government contract. Network support includes, but is not limited to: account and password maintenance, systems monitoring, network integrity, systems back-ups, troubleshooting, preventative and corrective hardware maintenance, installation of hardware and software upgrades, technical support, modification and configuration control, systems engineering, architectural support, performance and trend analysis, LAN security oversight and LAN training.

The qualified candidate will possess a Bachelor's Degree in Computer Science or related field or equivalent experience. A minimum of 6 years related experience is required. The ideal candidate will possess excellent organizational skills and the ability to handle multiple tasks at one time. You must be self-motivated and be able to perform duties with minimal supervision. Familiarity with Windows NT 4.0, Windows 95, Office 97, Internet Explorer, Microsoft Outlook, Microsoft Exchange, Norton Anti-Virus and Infoconnect computer applications is necessary. Must be able to obtain a security clearance.

For immediate consideration, please forward resume (specifying desired location) with salary requirements to: Lockheed Martin Technology Services (NSP), Human Resources - LAD, 2025 Research Parkway, Colorado Springs, CO 80920 or fax: (719) 548-7391. Equal Opportunity Employer.

LOCKHEED MARTIN

Brandon Consulting Associates, Inc. (BCA) is a leading provider of Information Technology Consulting Services. BCA has immediate full-time opportunities for entry-level and experienced Software Engineers, Software Consultants, Programmers, Programmer/Analysts, Project Leaders, Project Managers, Database Administrators and Systems Analysts with any of the following skill sets:

CLIENT/SERVER, INTERNET
- C, C++, UNIX, Sybase, Oracle or SQL Server
- VC++, MFC, NT, Multi-threading, COM
- Powerbuilder, PFC, Windows, Oracle, Sybase, or SQL Server
- Visual Basic, MS-Access, Oracle, Sybase or SQL Server database
- Developer 2000, Designer 2000, PL/SQL, SQL*Loader
- Sybase, C++, Perl, Korn, Bourne Shell
- Oracle DBA, UNIX, NT
- Datawarehouse DBA, AIX, Oracle
- Sybase DBA, Replication
- JAVA, HTML, VB Script, Java Script, JDBC ASP, Visual Interdev, VB Script, MTS, COM, CORBA
- PB, PFC, SQL Server, C++, Java, ASP, VBScript, HTML, Symantec Café, FrontPage
- Lotus Notes, Domino, JavaScript
- Lotus Notes Administrator
- UNIX (SUN or HP or AIX) administrators
- Windows NT Administrators, TCP/IP, Routers, Hubs, LAN, WAN, Web Servers

ERP SYSTEMS
- BAAN, Tools
- BAAN Functional
- Peoplesoft HRMS

MID-RANGE / MAINFRAME
- COBOL, VSAM, CICS, DB2, JCL, TSO, MVS/ESA
- VAX/VMS/C, Sybase, Cobol
- DB2 DBA
- AS/400, RPG/400, COBOL

BCA
Brandon Consulting Assoc., Inc.
40 Brunswick Ave., # 100,
Edison, NJ 08818
Fax : 732 650 9122

Some positions require a Bachelor's Degree, others a Master's Degree. We will also accept the Foreign educational equivalent of the degree, or the equivalent in education and experience. Please fax or mail your resume to: "Attn: Human Resources-222" at above address.

Integrated Business Solutions is the internal key behind the IT performance of Lockheed Martin. We are one of the preeminent systems engineering and technology companies in the world and we are currently seeking the following:

Staff Systems Architect: performs lead role in analyzing, designing & development of industrial, manufacturing & financial software systems & applications. Implements large volume on-line & data warehouse applications systems using all Oracle applications including PL/SQL, Reports & Forms, AOL, & others.

Sr. Oracle Application Programmer/Analyst: lead development team to customize applications to support industry specific business process by designing & developing interfaces to different packaged application on multiple software environments & hardware platforms by using all Oracle applications such as RDBMS, Reports & Forms, PL/SQL, SQL, SQL Loader & others.

Database Administrator-Oracle: responsible for Oracle installation, day to day database availability, performance tuning, stability & growth. Create & reorganize database for schema owners & users. Customize & maintain all Oracle applications such as VER. 10.X & others.

Successful candidates will hold Master's or Bachelor's degrees in a relevant computer, engineering, business, or physical science field. Additional professional experience where required depending on the grade level of the position.

Please forward resumes with salary history in confidence to Lockheed Martin/IBS, Attn: Human Resources/MP71, 681 Loop Road North, Kannapolis, NC 28081, Fax: (704) 939-4288. E-mail: melissa.l.bitzer@lmco.com (Equal Opportunity Employer.)

Imagine an IT job in your dream city with a boss who wants you to have a life outside the office.

Or go to dice.com and actually find one.

dice.com
High tech jobs online

80,000 high tech jobs, including your next one.

PARADYNE™

YOUR HIGH SPEED CAREER STARTS HERE

Paradyne, Paradyne, a leader in broadband access products and technologies has the following positions available in our Red Bank, NJ and Largo, FL development centers:

Internetworking Systems Architect (RD25)
Lead and direct the internetworking architecture for Paradyne's Broadband Access Solutions offers. Expertise in ATM, TCP/IP, IPX, SNMP, BOOTP, DHCP, RSVP, RTP, L2F, PPTP, L2TP. Demonstrated experience in converting customer needs into product and network architectures. Experienced with industry standards and forums. Advanced degree plus 5-10+ years industry experience required for this senior-level position.

Software Applications Developers (RD20)
Develop, install and configure software for network management applications for digital access products. Requires Java and C/C++ languages, X-Based GUIs, and structured development methodologies in UNIX or Windows environments.

Software Developers (RD21)
Design/implement software sub-systems for network access products. Embedded processor development, hardware drivers, DDS, T1, E1, ISDN, DSL, WANs, TCP/IP, PPP, SLIP, LAP-B, Telnet, routing protocols, Frame Relay, ATM, and SNMP. Work in UNIX (Solaris and SunOS) development environment, Motorola 68xxx processors and/or Real time OS. Requires knowledge of C/C++.

System Test Engineers (RD22)
System testing complex data networking and switching products. Skills in the use of a testing methodology for test case creation and execution. Knowledge of TCP/IP, FTP, TFTP, Ethernet, Frame Relay, ATM and SNMP; router set-up and configuration.

Hardware Developers (RD23)
Circuit design of data communication products, including Frame Relay, T1, ATM, embedded processors, and programmable logic and/or ASICs utilizing Mentor Graphics and/or VHDL tools. Experienced in entire hardware cycle including design, development, test and introduction to manufacturing.

EDA Engineers (RD24)
UNIX & PC, API & EDA tool experience. ASIC, FPGA, LMG, board, HDL design and complex test bench, Mentor, and/or software design, installation, support, development and enhancement skills with C, AMPLE, TCL, PERL, Web/CGI programming and databases.

All positions require an appropriate degree in a technical discipline and relevant industry-related experience.

We offer rewards for your contributions and an extremely competitive benefits package. For immediate consideration, send resume (indicating position code) and salary requirements to: **Paradyne, Human Resources, 8545 126th Ave.N., Largo, FL 33773. Fax: (727)530-2267 or email:PdnJobs@Paradyne.com.**

Visit our website at www.paradyne.com. We are an equal opportunity employer m/f/v/d.

The Bronx Health Plan

COMPUTER PROGRAMMER/ ANALYST

Work for progressive licensed Prepaid Health Services Plan. Must have BS in Math, MIS, Computer Science or Engg.

Respond by resume to:

The Bronx Health Plan, Inc., H.R. Dept.,
One Fordham Plaza, Bronx, NY 10458-5871

The Bronx Health Plan is an Equal Opportunity Employer.

SOFTWARE ENGINEER/ PROGRAMMER ANALYST...

With 2 years of industry experience to design and develop software applications. Excellent communications and a Bachelor's degree required Fax resume to. Pragma HR (781)932 0895 or email non attached resumes. Ibct-li@raymondkarsan.com

---

Lead Systems Engineer
Stein Roe & Farnham,
Chicago, IL

Design, implement and maintain company's local and wide area networks; implement and maintain Windows NT servers in multiple domains, SQL, SMS, & Lotus Notes servers. Requirements include knowledge of network management tools and utilities. Mail, fax, or e-mail your resume to: Colonial Management Associates, Inc., One Financial Center, Boston, MA 02111-2621; Fax: (617) 345-6772; e-mail: sstowe@lib.com. Equal Opportunity Employer.

Network Engineer to design & implement switched LAN networks, WAN & UPN's for various clients using CISCO range of internal working equipment, including design of network infrastructure, routing architecture & packet-switched wide access networks; remote control s/ware, remote access servers, ISP equipment, ISDN PRI/BRI links & CISCO routers; detailed site survey to determine the network integration needs, implementation of switched LAN & WAN networks; train site engineers; Reqs. Master's in Comp. Sci., Systems Analysis, Comp. Info. Systems, Computer Engg., Electrical or Electronics Engg. or Math or its foreign educ. equiv. plus 3 yrs exp in job offered or 3 yrs related exp such as Marketing Engr., National Technical Mgr. or Product Mgr. Will accept a bachelor's degree or foreign equiv degree, followed by at least 5 yrs progressive exp in the specialty in lieu of req'd educ & exp. Related exp must include 3 mos using remote control s/ware, remote access servers, ISDN PRI/BRI Links & CISCO routers; $60,545/yr, 40 hrs/wk, OT as reqd, 8a-5p. Send resume or C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl, Phila, PA 19123, J.O. #2025545

Full-time Senior Hardware Design Engineer responsible for the specification, design, implementation and verification of communications products using telecom and datacom system architectures and protocols. Perform analog, digital, DSP and microprocessor based designs and develop firmware to support/test products using ASM programming, C/C++, embedded systems development, FGPA design, Motorola processor architectures, parallel and multiprocessor system designs, transmission line design and PCB layout. Work with Telecom and ETSI standards to help company develop products for both US and International markets. Must have a Master's degree in Electronics or foreign degree equivalent. Must have one year of experience in the job offered or one year of experience in a position with same duties. Salary $59,992/yr. Send resume to: Mr. Jeff Hales at Digital Transmission Systems, Inc., 3000 Northwoods Parkway, Bldg. 330, Norcross, GA 30071.

Sr. Software Engineer. Develop semiconductor products to use in high-speed network communications applications; design & verify design features using C & complex test algorithms; develop software tools to aid in debugging & development of hardware silicon & layered firmware products; design, code, debug & test applications that implement ATM & LAN protocols using embedded firmware on MXT 3010 programmable cell processor; use source control tools & C/C++ languages. Multiple Openings. Requirements: M.S. (or equiv) in CS or Elec Eng + 3 yrs exp in job offered or related occupation in the data networking profession OR B.S. (or equiv) in CS or Elec Eng + 5 yrs exp. Candidates must also possess expertise in LAN protocols; expertise debugging ATM firmware applications; 2 yrs exp in design & develop of ATM protocols; & 1 yr exp in programming in embedded firmware. Salary: $65K/yr; M-F, 9-5. Resumes to: Case #19981598, P.O. Box 8968, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the U.S. on a full-time basis.

Computer

At Lucent Technologies, we're defining the future of telecommunications. We're currently looking for individuals with an MS and/or 1-2 years of directly related experience in: Software Development, Software Engineering, Database Engineering, Software Architecture, Software Testing, System Administration & Integration, Electrical Engineering, and RF Engineering. We seek experience in the following: CDMA, C/C++/UNIX, Switching Technology, RD-8MS, GUI Design, Internet/Network Protocols, Wireless Telecommunications, Software Tools, Object Oriented Methodologies/Small Talk.

Please send your resume to: Lucent Technologies, Inc., Scanning Operations, Attn: 63/060799/ND, 283 King George Road, Warren, NJ 07059. EOE.

Systems Analyst to analyze user requirements, procedures & problems to improve existing system; review system capabilities, workflow & limitations to determine if requested program or program change is possible within existing system; upgrade system & correct errors to maintain system; analyze, design & program software system using Pro*C, Oracle, Visual Basic, PowerBuilder & Oracle Forms; Reqs. Bachelor's in Comp. Sci., Computer Applications, Computer Info. Systems, Comp. Engg, Electrical or Electronics Engg. or Math or its foreign educ. equiv. plus 1 yr exp in job offered or 1 yr related exp such as Programmer Analyst or Analyst Programmer. Related exp must include using Oracle, Visual Basic, PowerBuilder & Oracle Forms; $56,494/yr, 40 hrs/wk, OT as reqd, 8a-5p. Send resume or C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl, Phila, PA 19123, J.O. #2025550

Programmer Analyst to plan, design, develop, code, test & implement s/ware programs in new & existing systems & use SQL, C++, Visual Basic & Cobol; analyze & design data while using Oracle, Access & Btrieve; formulate plan outlining steps required to develop program; prepare flowcharts & diagram steps required to develop program, prepare flowcharts & diagrams illustrating sequence of steps program follows; provide training & assist users; Reqs. Bachelor's in Comp. Engg., Comp. Sci., Comp. Info. Systems, Comp. Applications, Electrical or Electronics Engg. or Math or its foreign educ. equiv. plus 2 yrs exp in job offered or 3 yrs related exp such as System Analyst &/or Sr. S/ware Engr. Related exp must include using Visual Basic, Cobol, Oracle, Btrieve & Access; $56,494/yr, 40 hrs/wk, OT as reqd, 8a-5p. Send resume or C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl, Phila, PA 19123, J.O. #6025311

SYSTEMS ANALYST/FINANCIAL APPLICATIONS (Manhattan) Software development company seeks Systems Analyst for Financial Applications to design, develop & customize financial software for our clients utilizing Oracle Financials with Oracle database. Consult with clients to determine needs & requirements, conducting extensive user requirements analysis. Develop custom accounting packages & implement system architecture. Successful applicants must possess Bachelor's degree in Computer Science or Accounting & one year exp. in developing Oracle Financial Application. Salary commensurate with experience. Mail resume to: K2S Group, Inc. 304 Park Avenue South, 11th floor, New York, NY 10010, attn: Mr. Vakil

---

Project Leader: Data Warehouse Development sought by Norwood, MA sftw. mgmt. corp. to coordinate design, devel., implementation, support and maintenance of the Data Warehouse/Data Mart database apps. Duties: manage Data Warehouse database; design, devel. and implement data models, database schemas, data extraction programs and data access tools using Infopump scripts, VB Scripts, MS Visual Basic and MS-SQL Server; implement and manage solutions according to needs of clients and in-house business units. Req'd: BS (or equiv. in educ. & exper.) in MIS/CIS, 4 yrs. exper. in database development. Send responses c/o Computerworld, P.O. Box 9171, Framingham, MA 01701. Responses must indicate ref. #11075.

UNIX Dept. Manager - 9 Net Avenue, Inc., a fast-growing, dynamic internet software development & Web hosting co., is presently seeking the services of an UNIX Department Manager to develop & design Internet routing architecture, oversee the staging & administration of mission critical UNIX and ORACLE database servers. Requirements are as follows: Bachelors in Computer Science, Math, or Engineering; 3 years experience in position or as a Network Engineer. Working experience w/Perl, Java, ORACLE, UNIX, PL/SQL, and Border Gateway Protocol also req'd. Competitive salary & benefit package offered. Send all resumes to: 9 Net Avenue, Inc, HR Dept, 110 Meadowlands Parkway, Seacaucus, NJ 07094, or fax to (201) 902-1422.

SOFTWARE ENGINEER to design, develop, test, implement and document application software for multi-tier client/server systems using C/C++, communication network protocols, Oracle RDBMS, PL/SQL, Java, ODBC and Crystal Reports in UNIX and Windows based environments; Port applications to operating systems supported by handheld devices; Administer Unix based systems, Sun Solaris and develop shell scripts for systems maintenance. Require: M.S. degree in Computer Science, or a closely related field, with 2 years experience in the job offered. Salary: $65,000 per year, 8:30 am to 5:30 pm, M-F. Apply by resume to: Deborah L. Smith, HR Manager; Future Horizons, Inc.; 11605 Haynes Bridge Road, Suite 600, Alpharetta, GA 30004; Attn: Job SM

Senior Software Development Engineer wanted by S/Ware Dvlpmt, Products & Services Co. in Cambridge, MA. Must have BS or equiv in Comp Sci or related field, 3 yrs exp in s/ware engg and strong background in UNIX internals, networking, PERL scripting and C/C++. Respond by resume to: HR Dept, Clam Associates, 215 First St, Cambridge, MA 02142 or HR@clam.com

---

Shaw's Supermarkets, Inc., a Supermarket Chain in Brockton, MA, seeks to fill the following positions:

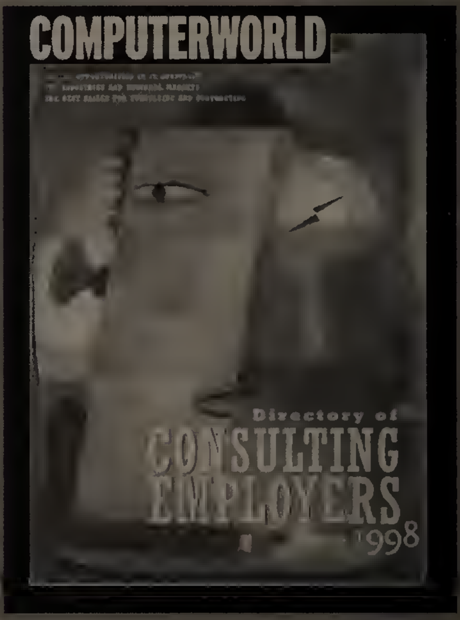
1. Senior Software Engineer - Must have MS or foreign equiv in Elect Engg, Mech. Engg, Comp Sci or Comp Engg. Job Code KD-Y

2. Software Engineer - Must have BS or foreign equiv in Elect Engg, Mech Engg, Comp Sci or Comp Engg. Job Code KD-B

Both positions require 1 yr software experience in large scale D/base Mgmt Systems. Respond to: Karen Demers, Shaw's Supermarkets, Inc, 120 Liberty St, Brockton, MA 02301.

Network Systems Engineer wanted F/T by Computer N/work Consulting Co. in New York City. Must have Bach. in Electronic Engg & 2 yrs exp providing tech support to clients for communication n/work technologies dsgn & implmtn. Respond by resume to: D. Rosen, HR Dept, Total Network Solutions, Inc., 545 Fifth Ave, 14th Fl, New York, NY 10017.

FIND
I.T. Consulting Careers
HERE



computerworldcareers.com

COMPUTERWORLD CAREERS

Senior Systems Analyst - Must have B.S. degree (or equivalent combination of education/work experience) in Computer Science, Engineering, or Math; three years of work experience in the field will be considered equivalent to one year of college/university education in the field. Must have at least two years experience in the job offered or two years experience in all levels of SAP system. Functional, theoretical, practical & technical experience required. Must be proficient in following SAP system basics: Screenpainter, ABAP/4, Data Dictionary, R/2 and R/3 versions. Will analyze the user requirements, procedures and problems to program the SAP system into a new system for the clients or to improve the existing computer system up to the SAP full integration. Will confer with users concerning the needs and ascertain system requirements, identify the problems and learn the specific input and output requirements. Write detailed description of the user needs, program functions and steps required to develop or modify computer programs. The Senior System Analyst will review the computer systems' capabilities, work flow of the existing users' system and schedule limitation to determine if the SAP program is possible within the existing system. Will conduct studies pertaining to the development of the new SAP system, plan and prepare technical report and instructional manuals for users. Must have proof of legal authority to work in the U.S. Salary: $95,000/year, 40 hrs/wk. Several positions available. Apply in person or send two resumes to: GA Dept of Labor, Job Order #GA 6084072, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Service Office.

SENIOR SOFTWARE ENGINEER to design, develop, test, implement, maintain and support application software systems under Windows NT and MS SQL Server-based environments using C + +, Borland Delphi, PowerBuilder, CA Visual Objects, FoxPro and Clipper; Develop and monitor project plans, implementation schedules and their adherence using MS Project, Rational Rose UML and BOOCH techniques; Design and implement LANs and WANs using Bridges and Routers under heterogeneous environments including Windows NT Server, Novell Netware and UNIX operating systems; Design and implement domains, trust relations, replication technologies, failsafe backup strategies and security policies for clients using NT Server Enterprise; Program and administer large database sites using MS SQL Server and Oracle. Require: M.S. degree (or equivalent) in Computer Science, an Engineering discipline, or a closely related field, with two years of experience in the job offered. A B.S. degree with an additional five years of progressively responsible experience in the field will be considered equivalent to a M.S. degree. Extensive paid travel on short/long term assignments to various client sites is required. Salary: $68,000 per year, 8 am to 5 pm, M-F. Send resume to: Ram Ganeshan, Pyramid Consulting Inc., 5335 Triangle Parkway, #510, Norcross, GA 30092; Attn: Job CR

SENIOR SOFTWARE ENGINEER

Design and implement C backup applications that interface with commercial databases including Oracle, Sybase, Informix and SAP. Maintain database applications including assisting employees, system test and customer service in troubleshooting database related problems. Developed in C, C++ and UNIX platforms: Solaris, HP and AIX, using the application programming interface (API) provided by the database vendor such as Oracle multi-thread distributed environment. Administered commercial databases and developed test scripts using PERL or Shell languages. Knowledge of C, C++, PERL, TCP/IP, X-Windows/Motif, Oracle, Sybase, Informix, UNIX and Solaris. M.S. Degree in Computer Science OR Computer Engineering AND 1 yr exp OR 1 yr exp as a Software Engineer. M-F, 9-5, 40 hrs/wk, $65,832/yr.

Send 2 resumes/letters of application to:
Case# 19981490, PO Box 8968,
Boston, MA 02114.

REGISTER TODAY!
FREE ADMISSION

Make the smart career move - to Ireland.

Irish Technology Career Expo

Ireland, the Silicon Valley of Europe, the Emerald Jewel, the Celtic Tiger. Call it what you like, but one thing's obvious: during its 10-year economic renaissance, Ireland has become a major player in the world's economy due in large part to its booming high tech industries.

But how to access Ireland's high tech jobs? And what's it really like to live and work there?

At the Irish Technology Career Expo — the first event of its kind in North

- Talk directly to representatives from Ireland's top companies about thousands of exciting job opportunities
- Find out about working in the US for Irish companies who are expanding into the North American market
- PLUS! Learn everything you need to know about relocating to Ireland through a free seminar series

Discover the opportunities! Ireland is wired for growth and you could be a part of it. Take the first step by visiting the Irish Technology Career Expo. It will move your career in the right direction.

www.ITIreland.com

NEW YORK
June 14 & 15, 1999
Sheraton New York Hotel & Towers

IT STAFFING LTD.

BOSTON
June 17 & 18, 1999
Hynes Convention Center

THE K FILES

THE TRUTH IS OUT THERE.
So Are Great IT Jobs.

Search our
online job bank
for current listings.

KENDA

ATLANTA Tel: +1 770.730.9111 Email: info-atlanta@kenda.com	NEW YORK Tel: +1 212.599.6969 Email: info-newyork@kenda.com	PITTSBURGH Tel: +1 724.779.6400 Email: info-pittsburgh@kenda.com
BOSTON Tel: +1 781.245.8900 Email: info-wakefield@kenda.com	NORTHEAST RECRUITING CENTER Tel : +1 978.251.2500 Email: info-nrc@kenda.com	WASHINGTON DC Tel: +1 703.645.8009 Email: info-fallschurch@kenda.com

kenda.com

1-JOBS.com

Meet face-to-face with hiring managers from leading area high tech companies!

RESEARCH TRIANGLE PARK
HIGH TECH
CAREER
FAIR

June 14
11am - 2pm &
4pm - 7pm

The Sheraton Imperial,
4700 Emperor Blvd., Durham

FREE Admission
FREE Career Tips & Trends Seminar 10AM

Interested in new opportunities?
Attend and Explore Thousands.

Does your company need High-Tech Help?
See **1-JOBS.com/show.htm** for details on exhibiting in our shows.

Interested in Online recruiting?
Highlight your organization to over ***700,000 High Tech Professionals*** with a **FREE** Company Profile ad and 3 FREE Online Job Ads. See **1-JOBS.com/free.htm** for details.

Enter to win a
$12,000
raise in salary!
Post your resume today!

Call: 800-593-0101 .Fax: 800-958-JOBS
E-Mail: Info@1-Jobs.com

Not near a Career Fair or attending and wanting to get ahead of the competition? Post your resume and search for jobs. Visit us at 1-JOBS.com

---

ORACLE INFORMIX SYBASE PROGRESS UNIX HP-UX SUN SQL POWER
BUILDER MS NT DELPHI C++ VISUAL BASIC VISUAL C++ COBOL CICS DB2 IMS
JAVA MIDDLEWARE NATURAL/ADABAS TERADATA REDBRICK ORACLE
INFORMIX SYBASE PROGRESS UNIX HP-UX SUN SQL POWERBUILDER MS

A CAREER WITHOUT BOUNDARIES.

For Computer Professionals,
The Opportunities Are Limitless.

We are looking for database, development and systems specialists to place on assignment throughout the United States. Applicants must be prepared to relocate on a project by project basis an average of every 3-6 months.

Positions include:

- Database - administrators, modellers, architects and warehousing specialists
- Development - programmer/analyst and systems analysts
- Systems - administrators and architects

Salary ranges are from $42,500 to $88,500.

Positions require at least two or more years of applicable experience. Highly technical and senior positions may require a master's degree and/or additional years of experience.

Applicants are required to sign an eighteen month employment agreement and must have proof of legal authorization to work permanently in the United States.

Please send your resume to Tania Brown at the address below.

Tania Brown
Computer Consulting
Services Corporation
200 Ashford Center North, Suite 200
Atlanta, Georgia 30338 USA

Telephone: (770) 393-8646
Facsimile: (770) 393-0706
E-mail: careers@ccsc.com

COMPUTER CONSULTING SERVICES CORPORATION

No Boundaries.

Technical Support Analyst wanted by Davie, FL Co. involved in Dvlpmt & Distribution of S/ware. Must have 2 yrs experience and Bach in Comp Engg. Respond to: Software Choice, Inc, 5400 S. University Drive, Davie, FL 33328.

Software Engineers wanted by Computer Consulting Co. in Edison, NJ for client sites in NY & NJ. Must have 6 mos software experience. Masters or equiv in Comp Sci or Engg req'd. Respond by resume to: HR Dept, Dataformix Technologies, Inc, 348 Michelle Circle, Edison, NJ 08820.

Programmer/Analyst wanted F/T by IT Co. in Union, NJ. Must have BS degree and 3 yrs exp dvlpg applic w/ PowerBuilder v6.5 & using Foundation Class Libraries (PFC's) working w/Sybase & Oracle RDBMS and writing stored procedures and triggers. Respond to: HR Dept, Patel Consultants Corporation, 1525 Morris Ave, Union, NJ 07083.

Republic National Bank of NY is seeking to fill the following positions at their New York City locations: i) Sr. Database Design Programmer/Analyst - Must have Masters in Comp Sci, Comp Appls or Comp Engg and 2 yrs exp dsgng, documenting & implmtg logical & physical d/bases & networked d/base access applics using C++, Oracle, PL/SQL and ODBC s/ware under UNIX QS. ii) Network Engineer - Must have Bachelors in Comp Sci or Electrical Engg and 1 yr exp analyzing, dsgng, & dvlpg specs for LANs under TCP/IP and dvlpg scripts using C++. Respond to: Shirley Cooper, Republic National Bank of NY, 452 Fifth Ave, New York, NY 10018.

Quality Assurance Engineer needed FT by Princeton, NJ Consulting Co. to test Commercial/Business Applications using SQA Robot and Qracle, PL/SQL, SQL Forms, Pro*C. Develop test scripts, write shell scripts in UNIX, AWK, C. Must have 2 yr. exp. with SQA Robot, Oracle in UNIX/C environments. Bach. in Engineering or Comp/Sci. req'd. Respond to: Princetec, Inc. 25 Jefferson Plaza, Princeton, NJ 08540.

Systems Analyst needed by Head Office of Japanese Restaurant Chain in New York City. Must have 2 yrs exp analyzing user reqmts & problems to improve computer system & network. Respond to: HR Dept. East Boy, Inc, 250 W 57th St. Ste 1422, New York, NY 10107

Vista Technologies, Inc.
Progressive Consulting & Systms Dvlpmt Co. has immediate openings for S/ware Profl's in Client Server & Mainframe areas. Excellent salary + benefits comm. w/ exp.

Qur reqmnts incl:

- Unix, C, C++, Java
- Vax, VMS,
- C Shell,
- Sybase 10/11
- DBAs & System Administrators Mainframe, Client Server Testers-All Envrmts.

Fax or e-mail resumes to:
68 Liberty Drive
Dayton, NJ 08810
Fax: (732)297-6116
E-mail: nr.vista@worldnet.att.net

Programmer/Analyst needed by Comp. S/ware Dvlpmt/ Consulting Co. in Rochelle Park, NJ. Must have Bachelors in Comp Sci, Comp Engg or Math and 2 yrs exp analyzing user reqmts, dsgng, dvlpg, customizing and testing Commercial & Web applics using Oracle, PL/SQL, Oracle Web Server, Oracle Web Applic server dvlpr toolkit and Developer 2000 on UNIX and Win-NT platforms. Respond by resume to: HR Dept, Matrix Information Consulting, Inc, 365 West Passaic St, Rochelle Park, NJ 07662.

Project Director - Plan, direct & coord activities of computer professionals in multi-tiered C/S, internet/intranet based multi-user applics projects. Min. 3 yrs. exp. in position offd or as a Systems Analyst & *MS in Comp Sci or related field. *In lieu of MS, will accept BS + 2 add'l yrs of exp in job offd or as a Systems Analyst. Exp.. references reqd. 65K/yr. Send resumes to: Primetech Solutions, 5390 Peachtree Ind. Blvd, Ste 210B, Norcross, GA 30071.

COMPUTERWORLD CAREERS
computerworldcareers.com

99
TECHNICAL
RECRUITING
& RETENTION
CONFERENCE
COMPUTERWORLD
June 6-9,1999
Palm Desert
CALIFORNIA
1-800-488-9204

COMPUTER PROGRAMMER/ANALYST

Develops/implements programs for financial, human resources and other business applications using Japanese /English Powerbuilder, Oracle, Windows. BS in computer science or equivalent, 1 yr exp as programmer or analyst, and proficiency in C/ C++ and SQL reqd. Letter or fax to Sumisho Computer Systems U.S.A. Inc 600 Third Ave 18th Fl New York NY 10016. 212-687-4682

SKILLSOFT

PEOPLE WITH THE FOLLOWING SKILLS NEEDED FOR ASSIGNMENTS THROUGHOUT THE USA. ORACLE, SYBASE, POWERBUILDER, AS-400, PROGRESS, UNIX SYS ADMIN, NATURAL, SQL/SERVER, JAVA. MUST HAVE AT LEAST 3 YEARS HANDS ON EXPERIENCE. Salaries from $45K TO $70K/YEAR. PLEASE MAIL RESUME TO DIR. RECRUITING, Skillsoft Incorporated, 151 W. Passaic Street, Rochelle Park, NJ, 07662, U.S.A. www.skillsoffusa.com

FIND

I.T. Consulting Careers

HERE

COMPUTERWORLD
Directory of
CONSULTING EMPLOYERS
1998

computerworldcareers.com

SOFTWARE ENGINEER - Will design, develop, implement and tune commercial applications for mainframes using client-server technology, DB2, customer information control system and Information Engineering Facility tools. Will use Expeditor, File-Aid, command list, BMC utilities and platinum tools. Will use virtual storage access method, Cobol, Job control and structured query languages, Rexx, Assembler and C on MVS/ESA, OS2/Warp and Novell NetWare platforms. Will use SAS and screen design facility tools. Will have Master's in Comp Sci (or its equivalent) + 1 yr exp in the job offered. 40 hr wk/$68,640 year. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Center, 800 Seventh Street, Cedar Rapids, Iowa 52406-0729. Please refer to Job Order IA 1100878. Employer paid advertisement

Programmer Analyst. Duties include the installation, support and maintenance of Novell and NT Servers, maintenance and support of databases, based on SQL Servers, telecommunications, LAN, WAN. Also need to manage help desk for 150 users and supervise 3 P.C. technicians and support and manage the agency manager system on FOX PRO 2.5. Customize and design insurance statistical marketing, and renewal systems, using Oracle Version 7.0. Hours are from 9:00 AM to 5:00 PM, 40 hours per week, Monday through Friday. Must have 2 years of college, AA degree, with major in computer engineering, and three years of work experience, as a programmer analyst. Job is in Miami, Florida. Salary is $47,424.00 per year. Send resume to Department of Labor/Bureau of Workforce Program Support, PO Box 10869, Tallahassee, FL 32302, Att: EH., JOFL#1958032.

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in UNIX, C and Network Programming. Requirements: Master's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of UNIX, C and Network Programming. Salary: $78,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Terry Kinney, Armstrong County Job Center, 1270 N. Water Street, PO Box 759, Kittanning, PA 16201, Job No. 9097114.

SOFTWARE ENGINEER - Work with a team of engineers responsible for the functional specification & design specifications, development, implementation, coding, testing, and debugging of network management software components. Components will be developed in an object-oriented environment using C/C++, X Window Programming, Motif, XLib, network telecommunications protocols such as TCP/IP, ISDN, OSI, SNMP. 40 hrs./wk. $66,729.05/yr. MSCS/ CE/EE or related field of study. No experience necessary. Must have knowledge in the following: C/C++, telecommunications protocols, and object-oriented programming. Must be US citizen, permanent or lawful temporary resident, refugee or asylee. Send 2 resumes to Job Order #19981345, P.O. Box 8968, Boston, MA 02114.

VEGA is currently staffing for *long term, stimulating*, consulting projects throughout the USA. We are hiring professionals with any of the following skills.

- AS/400
- MAINFRAME
- ORACLE
- WEB
- POWERBUILDER

VEGA
Consulting Solutions, Inc.
www.vegaconsulting.com
phone: 800-810-8342

Technical Consultant: Duties (i) code & test programs & enhancements for clients & maintain client programs; (ii) determine & create test criteria; (iii) perform system tests or test enhancements or mods; (iv) analyze & resolve outstanding issues; (v) research, analyze, install & implement applications or product lines; (vi) research problems & make changes; (vii) develop technical specs & processing procedures; & (viii) educate client & consultants on applications or product lines. Reqs: Bachelors or equiv. in Computer Sci, Business, Eng. field plus 3 years exp. in job offered or as Programmer. 3 years exp. to include 3 years exp. in COBOL programming language & 3 years exp. in systems design, analysis & implementation using DB2. The ability to travel 50% domestically/internationally is req'd. Hrs. M-F, 8-5. Salary $54,625.00/yr. Send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O. #TX0520220. "Ad Paid by An Equal Opportunity Employer".

SOFTWARE ENGINEER

Software Engineer to analyze user requirements, procedures and problems to automate processing and improve computer systems through Enterprise Resource Planning. Render analysis of processing specifications, design, development, configuration and installation of software for business applications. Carry out database modeling based on system and user requirements analysis using knowledge of Oracle 8, Oracle Financials, Oracle Human Resources & Payroll, Developer 2000, PL/SQL, Pro*C and shell scripts. **Requirements:** Bachelor's Degree in Computers, Business or related field and four years experience as a Software Engineer or Computer Programmer, and knowledge of Oracle 8, Oracle Financials, Oracle Human Resources & Payroll, Developer 2000, PL/SQL, Pro*C and shell scripts. **Salary**: $75,000 per year. **Working Conditions**: 8:00 A.M. to 5 P.M., 40 hours/ week. **Apply:** Local Office Manager, Pittsburgh South Job Center, 2100 Wharton Street, Pittsburgh, PA 15203. Refer to job order number 8051008.

Software Engineer (2 openings): Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. One year of experience in job offered or as a computer professional as well as one year of experience using 1 of Group A and 3 of Group B OR 2 of A and 2 of B, as follows: Group A Oracle RDBMS, Designer 2000, Developer 2000, Oracle Applications (Financials, Manufacturing - Order Entry & Inventory); Group B - Oracle Forms, Oracle Reports, SQL*Plus, Pro*C, PL/SQL, SQL*Forms, SQL* Reports. Work involves extensive travel and frequent relocation. Bachelors degree in one of several limited fields: Computer Sci/Apps, Eng., Chem, Math or Physics or scientific or business related field. Salary: $65,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Ms. Joan Lang, Manager, Pgh. West Job Center, 320 Bilmar Drive, Pittsburgh, PA 15205. Reference Job Order No. 2025659

System Architects needed to use the most current tools & technology, provide software project & resource planning; identify user needs & plan appropriate system to meet those needs given any limitations in hardware or software; provide database design & planning for multi-tier software architecture; using Windows NT, Visual C/C++, Internet technologies, Middleware, TP Monitors, Messaging, Clustering, COM/DCOM, Oracle, MS SQL; perform other related duties as assigned. Sal @$75,000/yr., O/T@$36/hr; Req's M.S. or Equiv. in Comp. Sci. or Rel. Field; reqs. travel & knowl of middleware technology as shown by experience working w/it or by college study. Send resume to Jennifer Hansson, Aerotek/ Maxim Group, Inc., 7301 Parkway Drive, Hanover, MD 21076. ID Ref. No. KHA-99-75955.

SAP Technical Team Leader (multiple openings). Four yrs.' exp. in the job offered or in SAP R/3 programming w/ 2 yrs.' exp. in each of the following: SD, MM, FI and PP modules. Stated or add'l exp. must include 2 yrs. in: developing & implementing SAP interfaces and SAP performance monitoring and improvement in a production environment. All experience may be, but need not be, concurrent. Travel up to 30% of working time. Lead a team of engineers and technical staff in multiple projects involving SAP R/3 programming using SD, MM, FI & PP modules, in order to design, develop and implement software to manage internal business transactions and analysis. Provide direction to analyze business issues and provide technical solutions in SAP application environment. Direct development & implementation of SAP interfaces and data conversions using Universal Portable Interface (UPI) tools and manage SAP performance monitoring and improvement in a production environment. Establish programming standards and guidelines. 40 hrs./wk. 8:00-5:30. Salary range: $60,810-$94,600/yr. dep. on qualifs. Send resume to: Gwen Mayenschein, Scientific- Atlanta, Inc., 4261 Communications Drive, Norcross, Georgia 30093.

Technical Consultant: Duties (i) code & test programs & enhancements for clients & maintain client programs; (ii) determine & create test criteria; (iii) perform system tests or test enhancements or mods; (iv) analyze & resolve outstanding issues; (v) install & implement applications or product lines; (vi) research & analyze applications or product lines & problems & make changes; (vii) develop technical specs & processing procedures; & (viii) educate client & consultants on applications or product lines. Reqs: Bachelors or equiv. in Computer Sci, Business, Finance, Accounting, Eng. field plus 4 years exp. in job offered or as Programmer utilizing banking applications. 4 years exp. to include 4 years exp. in COBOL programming language & 4 years exp. in software development methodologies, designs & implementation in the banking industry. The ability to travel 50% domestically/internationally is req'd. Hrs. M-F, 8-5. Salary $70,000/yr. Send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O. #TX0520221. "Ad Paid by An Equal Opportunity Employer".

Production Marketing Manager: Internal interface between Engineering and Customers. Provide Project Management function and act as a liaison with Engineering in all NSG Video Business Unit, video partners and channel activities. Manages video server product integration to comply with customer specs and third party hardware/software. Design and manage integration of video server into complex communication environments involving computer data communication networks, robot controlled digital tape libraries and third party video codes. Design and implement Graphic User Interface for Video Servers' content management. Knowledge of: C++, Java, UNIX, Windows NT, Windows 95, Video Compression, Data Communication Networks and Design/configuration of GUI for broadcast environments. M.S. Degree OR Foreign Equivalent in Electrical Engineering AND 2 yrs exp OR 2 yrs exp as a Project Manager/Electronic Engineer. M-F, 9-5, 40 hrs/wk, $112,000/ yr. Send 2 Resumes/letters of application to: Job Order #19981306 PO Box 8968 Boston, MA 02114.

SCS AMERICA
SOFTWARE CONSULTING SERVICES

SCS is a fast growing National Implementation Partner for SAP. We provide a full range of SAP services both directly and indirectly to clients. We are searching nationwide for enthusiastic SAP analysts with the following requirements:

- SAP experience in FI, CO, AM, PS, HR, SD, MM, WM, PP, QM, SM, Basis or Abap/4.
- Some positions require 2 years SAP experience and/or Bachelors or Masters Degree.
- Extensive travel and possible relocation involved.

For immediate consideration mail, fax or e-mail your resume to:

Job #A05786581

SCS America Inc.
950 Tower Lane
#1850
Foster City, CA 94404

(650) 578-6530 (Fax)
Resumes@
scsamerica.com

Think Big!
Think SAGA

SAGA SOFTWARE, Inc. is a world-class software company delivering enterprise-class software products and services. So join our team of top professionals and help us set our clients' information and their business free.

We are recruiting for all types of Systems Analysis Consultants, Staff Consultants, Project Managers/Leaders, System/Software Engineers, Programmer/Analysts, and other computer science professionals.

Openings throughout the U.S. including: Reston, VA; Atlanta; Chicago; Dallas; Philadelphia; Sacramento and Irvine, CA; Denver; Fort Lee, NJ; and Bloomington, MN.

We offer competitive salaries and comprehensive benefits. Please send your resume to: SAGA SOFTWARE, Inc., ATTN: Human Resources, Computerworld Ad, 11190 Sunrise Valley Drive, Reston, VA 20191. Fax: (703) 391-8340. E-mail: sahus@sagafyi.com. For additional opportunities, see our ads under Computer or visit our Web site: www.sagafyi.com.

SAGA

Software Engineer - Design & develop software systems & analyze reqs. for design feasibility within time & cost constraints, evaluate interface between hardware & software reqs. of overall system & consult w/staff. Req. Bachelors - Eng/Math/Computer Science & 2 yrs. exp.

Programmer Analyst - Analyze & devise computer systems & programs. Develop specs per user reqs. convert project specs into coding instructions. Bachelor-Computer Science/Engineering/ Math/Accounting & 2 yrs. exp.

Project Manager/Director - Direct & coordinate company's software, ERP & turnkey information technology project. Involvement in project control management, proposal management, cost engineering, project staffing, business development. Req. Bach-Engineering, Computer sci & 5 yrs. exp.

Technical Marketing Engineer - Market software & tools. Customize software products to client's reqs. est. training programs. Bachelors - Computer Science & 1 yr. Exp.

Send resume for desired position to TCT, 8150 Leesburg Pike, Ste. 706, Vienna, VA 22182. Attn: Dr. Alula Abate

Software Engineer (Level I) sought to serve under the supervision of a technical team leader, design, implement, and test financial software libraries and application programs using object-oriented analysis and design (OOA&D) techniques. Use of C++, OOA&D, third-party graphical user interface (GUI) tools and other software development tools. Develop GUI application programs and real-time communications application programs. B.S. or equivalent in Computer Science, Engineering or Math + 1 yrs/exp in job offered or 1 yrs/exp in software development. Experience must include: C++. Education or experience must include OOA&D methodologies. Hours: 40/wk. Salary: Negotiable. If interested, please send resume to: Mark Wagner, The MacGregor Group, 4 Liberty Square, Boston, MA 02109.

Senior Software Engineer (3 openings): Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation using relational data base management systems (RDBMS). Work involves extensive travel and frequent relocation. Must have 1 year of experience in job offered or as a computer professional as well as 1 year of experience using RDBMS as follows: 1 from A and 2 from B; or 1 from A and 1 from B and 1 from C; or 1 of A and 2 of C. A) DB2, FoxPro, Informix, Ingres, MS-Access, Oracle, Paradox, Sybase, Unify; B) AIX, DOS, HP-UX, MVS, Novell, OS/2, Sun OS, UNIX, VAX/VMS, Windows; C) 4GL, APT, C, C++, COBOL, Case Tools, C Shell, Crystal Reports, E-SQL, Easytrieve, JAVA, ODBC, PowerBuilder, PowerDesigner, PowerJ, Power++, S-Designer, SQL, Shell Script, Visual Basic. Masters Degree in Computer Science/Applications, Engineering, Chemistry, Math, Physics or a scientific or business related field. Will accept a Bachelors degree with 5 years of experience as a computer professional. Salary is $75,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Tom Rusnack, Manager, Charleroi Job Center, 10 Paluso Drive, P.O. Box 210, Charleroi, PA 15022. Reference Job Order No. 7050921.

Computer Sciences Corporation (CSC) Career Opportunities:

California, Massachusetts, Illinois, Ohio, Virginia, New York Consider the following openings for systems development/consulting positions:

CSC Consulting, Inc.

California
- Staff Consultant/Technical Analyst
- Staff Consultant (Application Builder)

Massachusetts
- Software Engineer
- Senior Consultant, SAP (Systems Application Product)
- Business Consultant, SAP (Systems Application Product)

Illinois
- Staff Consultant (Programmer Analyst)
- Senior Consultant

Ohio
- Staff Consultant, Technical Analyst
- Staff Consultant, Business Analyst

Virginia
- Staff Consultant
- Staff Consultant/Technical Designer

New York
- Senior Associate

Travel may be required. Salary DOE. Send ad & resume to Ad# 31281-7. Attn: Patty McNally, 2100 East Grand Avenue, El Segundo, CA 90245. Please indicate specific title and location of job for which you are applying on your application letter

SENIOR SYSTEM ANALYST: SENIOR SYSTEM ANALYST TO ANALYZE USER REOUIREMENTS AND DESIGN. CODE AND TEST SYSTEM IMPROVEMENTS ON IBM 3090 MAINFRAME USING COBOL, VSAM, DB2 AND IMS FOR A FINANCIAL APPLICATION AND TO SUPERVISE ENTRY LEVEL PROGRAMMERS. BS IN COMPUTER SCIENCE OR RELATED FIELD OF STUDY SUCH AS BUSINESS ADMINISTRATION OR EOUIVALENCY AND 4 YEARS EXPERIENCE AS SYSTEMS ANALYST OR COMPUTER PROGRAMMER, $70.000 PER YEAR, 40 HOURS PER WEEK. JOB NUMBER: 162575. SUBMIT RESUME TO: MRS. J. GASTON, DIVISION OF EMPLOYMENT SECURITY, 13131 NEW HALLS FERRY ROAD, FLORISSANT, MO 63033

Software Engineer - Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have 1 year of experience using: 1 of Group A and 1 of Group B and 1 of Group C; OR 2 of A and 1 of B; OR 2 of A and 1 of C as follows: Group A - DB2, IBM3090, IBM ES9000; Group B - MVS, CICS; Group C COBOL, JCL. Must have Bachelors degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics. Salary is $60,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Tom Dembosky, Mgr., Indiana Job Center, 350 N. Fourth Street, Indiana, PA, 15701: Job Order No.: 9097115

"Systems Analyst to design develop & implement system applications in Windows environment using SOL Server/MS-Access as a relational database management system. Re-engineer existing applications using GUI tools such as Visual Basic & Visual C++ in the design & development process. Create management reports using Crystal Reports, utilize SOL query optimization & provide technical support. High mobility. Required Bachelor's Degree in Computer Science/related field plus 6+ yrs. of progressive work exp. Exp. Must include 4+ yrs. of experience in Windows based applications, Visual Basic, Visual C++, Crystal Reports & SQL. High mobility, must have authorization to work in the U.S. 8.30 A.M. to 5:30 PM, salary: 70,000/yr., send resume attn. Sarah Franks, Cotelligent, Inc., 2429 Sidney St., Pittsburgh, PA 15203"

Computer Sciences Corporation (CSC) Career Opportunities:

Texas, New York, Michigan
Consider the following openings for systems development/consulting positions:

Computer Sciences Corporation
Texas
- Sr. Programmer Analyst

New York
- Sr. Computer Scientist
- Computer Scientist

CSC Healthcare Inc.
Michigan
- Sr. Technical Systems Consultant

Travel may be required. Salary DOE. Send ad & resume to Ad#: 31281-7, Attn: Patty McNally, 2100 East Grand Avenue, El Segundo, CA 90245. Please indicate specific title and location of job for which you are applying on your application letter.

Clipper/Foxpro Programmer Analyst Openings now at NOS COMMUNICATIONS in Las Vegas Applicant MUST have 2+ years experience developing and maintaining multi-user applications utilizing CLIPPER 5.2 and/or Foxpro 2.6 and up, or a Bachelor's Degree in computer science or related field. Teamworking in DOS and Novell/NT Windows development and other languages a plus. Salary based on experience. Full benefits, 401K. Fax resume with salary history and references to the IS Dept. at 702-547-8593. EOE

The 1999 Regional Conferences

Chicago Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, August 30, 1999
Rosemont Convention Center
Chicago, Illinois

Philadelphia Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, September 13, 1999
Sheraton Valley Forge Hotel
King of Prussia, Pennsylvania

Washington DC
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, September 27, 1999
Fairview Park Marriott
Falls Church, Virginia

New England
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, October 4, 1999
Boston Marriott Burlington
Burlington, Massachusetts

Dallas Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, October 18, 1999
Wyndham Garden Hotel
Dallas, Texas

Atlanta Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, November 8, 1999
J.W. Marriott Hotel - Lenox
Atlanta, Georgia

Bay Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, November 15, 1999
Hotel Sofitel
San Francisco Bay, California

For registration information call 1-800-488-9204

Have questions about your career?

Fran Quittel

Nationally Recognized Career Expert and Computerworld's CareerAdvisor Columnist

With a lengthy background in high tech careers and recruiting, Computerworld's CareerAdvisor Fran Quittel specializes in providing in-depth information for job seekers and a "Recruiting Scoreboard" to help employers audit and improve their internal recruiting practices. Fran is author of the book *Firepower: Everything you need to know before and after you lose your job* and is the original creator of The FirePower Career Forum on The Microsoft Network. She also publishes career advice at www.careerbabe.com and tips for employers at www.yourcareer.com

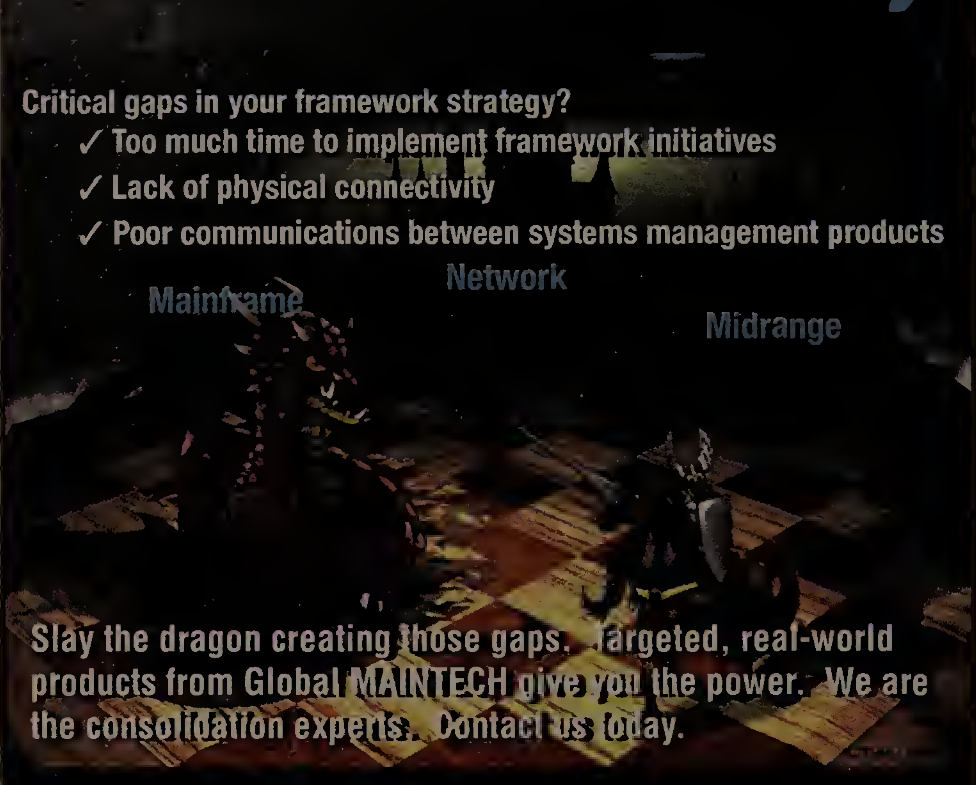
Ask Computerworld's CareerAdvisor

This new feature appears every other week and is Computerworld's interactive career advice column. Simply submit your questions to Computerworld's CareerAdvisor at **http://www.computerworld.com/career_advisor** and yours might be answered in the print and online pages of Computerworld by nationally recognized columnist Fran Quitell.

COMPUTERWORLD CAREERS The Newspaper for IT Leaders

MARKETPLACE

For more information on advertising,
call (800) 343-6474 Ext. 6000



Win the Battle for Business Continuity

Critical gaps in your framework strategy?
- ✓ Too much time to implement framework initiatives
- ✓ Lack of physical connectivity
- ✓ Poor communications between systems management products

Slay the dragon creating those gaps. Targeted, real-world products from Global MAINTECH give you the power. We are the consolidation experts. Contact us today.

AlarmPoint Automated Notification & Response
magnum Technologies
global MAINTECH, Inc.

7578 Market Place Drive
Eden Prairie, MN 55344
612-944-0400/3311 fax
www. globalmt.com

AlarmPoint®

Automated Notification & Response

COME VISIT US AT
HP WORLD FORUM
AUG 17-19
BOOTH #340

When problems are detected, contact the proper people via phone, pager or email.

Our *Evaluation CD* is the easiest way to learn how automated notification can benefit your organization.

To obtain your free AlarmPoint Eval CD, call toll free at (888) 221-0760 (option 1), visit our Website or email us at sales@SinglepointSys.com.

AlarmP
Critical Even
www.SinglepointSys.com

Learn more
about AlarmPoint
and receive a

FREE
AlarmPoint T-shirt!

Visit our Website for more details:
www.SinglepointSys.com
(Enter Ad Code: CW)

SPECTRUM | Candle | global MAINTECH, Inc. | HP OpenView Premier Partner | TIDAL Software | Dialogic | NETIQ | Computer Telephony 1997 Product of the Year

ATTENTION!

Attention!™ will page you, or call you on the phone when critical system or network problems occur.

- ✔ Supports UNIX, Windows NT, Windows 95, and Open VMS
- ✔ Notification via numeric and alpha pagers, telephones, and custom methods
- ✔ Interfaces with all leading system/network management products
- ✔ Unlimited escalation guarantees the right people are contacted
- ✔ Personnel call in to *Attention!* to acknowledge receipt of page
- ✔ Fault tolerant design supports redundant *Attention!* servers for immediate failover
- ✔ Event filtering suppresses redundant notification for same problem
- ✔ Heartbeat monitoring guarantees systems and critical applications are running 24x7

www.attentionsoftware.com

ATTENTION Software
2175 N. Academy Circle • Suite 100 • Colorado Springs, CO 80909
(719) 591-9110 • fax (719) 591-9590

Call for free demo software 800-684-1684

CUSTOMIZED PERSONALIZED INFORMATION TECHNOLOGY SOLUTIONS

Alicomp

We specialize in providing VM, MVS, VSE service to clients who need Outsourcing, Remote Computing, Year 2000: Mainframe Conversion Test Environment, Tape Conversions, Systems Programming & Networking Support Services

www.alicomp.com

Visit our website, or for more information, call 800-274-5556.

HURRICANE ELECTRIC
INTERNET SERVICES

Web Hosting
from 9.95/mo.

50 Megs Disk Space
3 Gigs of Traffic
21 POP3 Email Accounts
Only
24.95/mo.

Your Industrial Internet!

What We Can Offer You:
- Performance
- Reliability
- Support
- Experience
- Price

Any Questions?

For More Information
Email *info@he.net*
or Call
408.282.1540
or visit our Website
www.he.net

MARKETPLACE

For more information on advertising,
call (800) 343-6474 Ext. 6000

The agency of the best freelancers

Freelance Technologies

Major clients, Best rates

Excellent missions

Nationwide presence

Agencies worldwide

Web site: 100% free of charge

www.freelance.com

Rocket Your Career With Our FREE Self-Study Course!
Call Now to Get Your First Course at No Charge
(Limited Time Offer)

Discover the fast and easy way to increase your I.T. knowledge and prepare for I.T certification. Our computer-based training courses provide a self-paced and cost-effective alternative to classroom training. See for yourself how ForeFront Direct can give you the skills you need to accelerate your I.T. career. Call today for your FREE I.T. training course!

- Open the Door to Great Career Opportunities
- Raise Your Income
- Gain Valuable Skills, Knowledge and Technical Recognition
- Study at Your Own Pace
- Interactive Hands-on Exercises
- Online and Telephone Mentoring Available
- One-on-One Training Consulting

- Cisco
- MCSE
- MCP
- Webmaster
- CNE
- Networking
- MCSD
- Visual Basic
- C++
- Lotus
- PC Repair
- UNIX
- MCSE+Internet
- MCP+Internet
- Novell CIP
- CNA
- A+ Certification
- Java
- Visual C++
- Oracle
- Office 97
- Windows 98

Call now to get your FREE Course!

TOLL FREE 1-877-TRAINING
1-877-872-4646

FOREFRONT DIRECT
A CBT Group Company

25400 US Hwy 19N, #285 • Clearwater, FL 33763 1-800-653-4933 (727) 724-8994 Fax: (727) 726-6922 MCW

DATA RECOVERY: 800-440-1904

7 good reasons to choose DriveSavers:

DRIVESAVERS DATA RECOVERY
Since 1989
INTERNATIONAL 415-382-2000

1. We are the fastest, most trusted, and most successful data recovery professionals.
2. Retrieve recovered data instantly with DATAEXPRESS™ over secured Internet lines.
3. Recommended and certified by all drive companies to maintain your warranty.
4. 24-hour, onsite, and weekend service available.
5. Advanced, proprietary recovery techniques.
6. Featured by CNN, BBC, Forbes, and many others.
7. Federal and State Contracts (GSA, CMAS.)

Visit DriveSavers at: www.drivesavers.com

TRANSCENDER
Microsoft® Exam Simulations
Microsoft Certified Solution Provider
Questionable.
Guaranteed.

It all comes down to questions. Questions that challenge your expertise about Microsoft products. Question yourself – are you ready? Be absolutely sure. With Spike and the gang's certification guarantee, you will be. Because once you've completed the program, you'll pass with flying colors or get your money back.* And don't worry, because as Microsoft Certification changes, Transcender will have you covered...without question.

- Most Realistic MCSE and MCSD Simulations Available
- Detailed Answers and Explanations
- NEW! Computer Adaptive Testing Features
- NEW! Simulation Questions
- Money Back If You Don't Pass Guarantee*
- From $129 - $179

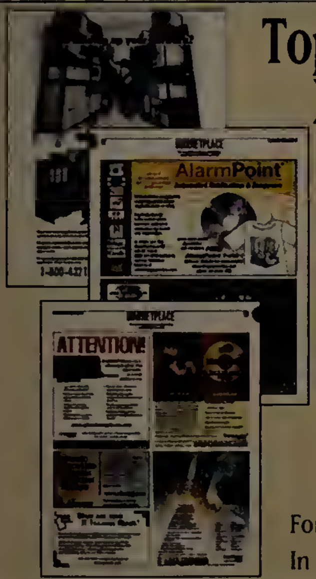
Transcender. America's #1 Exam Preparation Software.

Transcender® Corporation

To order, call Howard @ (615) 726-8779 or fax (615) 726-8884; 242 Louise Ave.; Nashville, TN 37203

www.transcender.com

©1999 Transcender Corp. All Rights Reserved. Microsoft is a registered trademark of Microsoft Corporation. Multi user licenses are available. *Call or see our Web site for details.



Top 5 Products/Services IT Leaders Want Advertised in the Computerworld MarketPlace:

Internet/Intranet • Desktop Software • Windows NT • Internetworking • Web Development Tools

For advertising information, call 1-800-343-6474, ext. 6000
In Canada, call 508-820-8249.

AD INDEX

SALES OFFICES

Computerworld Headquarters:
500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

Publisher
Michela O'Connor Abrams

Vice President/Associate Publisher - West
Elaine R. Offenbach

Vice President/Associate Publisher - East
Sherry Driscoll

Regional Vice President Southwest
Michelle Gerus

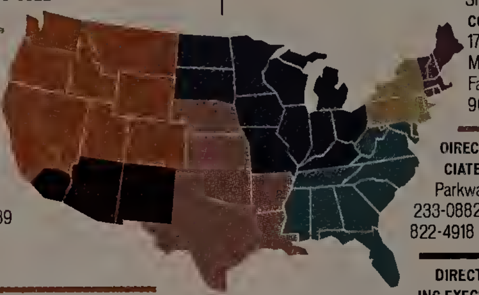
Vice President/Key Accounts
Linda Holbrook

EAST

DIRECTORS: Isabelle Kane, Laurie Marinone; **SALES OPERATIONS MANAGER:** Leslie Murray; **FIELD MARKETING EXECUTIVE:** Nathaniel Hampson; **SALES ASSOCIATES:** Cheryl Giangregorio, Samantha Hadley, 500 Old Connecticut Path, Framingham,MA 01701 (508) 879-0700 Fax: (508) 270-3882 TDD: (800) 428-8244

DIRECTOR: Lisa Ladle-Wallace, 5242 River Park Villas Dr., St. Augustine, FL 32092, (800) 779-5622 Fax. (800) 779-8622

DIRECTOR: Fred LoSapio; **DISTRICT MANAGER:** John Bosso; **FIELD MARKETING EXECUTIVE:** Maureen Grady; **SALES & OFFICE ASSOCIATE:** Susan Kusnic; **SENIOR SALES ASSOCIATE:** Jean Dellarobba; **SALES ASSOCIATE:** John Radzniak, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255. (201) 587-1289 TDD: (800) 208-0288



NORTHWEST

DIRECTOR: Judith Hamerman; **DISTRICT MANAGER** Denyce Kehoe; **SALES ASSOCIATES:** Carrie Peterson; **SALES OPERATIONS MANAGER:** Emmie Hung, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7000 TDD: (800) 900-3179 **SENIOR SALES ASSOCIATE:** Jill Colley, 10900 N.E. 8th Street, Suite 820, Bellevue, WA 98004 (425) 451-0211 Fax: (425) 451-3822

DIRECTOR: Blayne Long; **SALES ASSOCIATE:** Cathy Viox, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Fax: (847) 827-0690

SOUTHWEST

DIRECTOR: Ernie Chamberlain; **FIELD MARKETING EXECUTIVE:** Julie Compton; **SALES ASSOCIATES:** Claude Garbarino, Stefan Mayo, Brian Shindledecker; **SALES OPERATIONS COORDINATOR:** Madeleine Poquiz, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7001 TDD: (800) 900-3179

DIRECTOR: Jennifer Hedges; **SALES ASSOCIATE:** Doreen Robinson, 14651 Dallas Parkway, Suite 118, Dallas, TX 75240 (972) 233-0882 Fax: (972) 701-9008 TDD: (800) 822-4918

DIRECTOR: Cindy Wager; **FIELD MARKETING EXECUTIVE:** Robert J. Pietsch; **SALES ASSOCIATE:** Meredith Turner, 18831 Von Karman Avenue, Suite 200 Irvine, CA 92612 (949) 250-3942 Fax: (949) 476-8724

ADVERTISING OPERATIONS PRINT & ON-LINE

SENIOR DISPLAY ADVERTISING COORDINATOR: Gregg Pinsky; **DISPLAY ADVERTISING COORDINATOR:** Peter Coen, (508) 879-0700 Fax: (508) 879-0446

ENTERPRISE BUSINESS SOLUTIONS

BOSTON: Sales Operations Manager/Maria McGrath; Project Coordinator/Heidi Broadley; Managing Editor/Peter Bochner, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax: (508) 875-6310 **SAN FRANCISCO:** Sales Operations Coordinator/Nikki Wilson, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7000 **EAST:** Director/Peter Oxner, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Fax: (847) 827-0690

MARKETPLACE/DIRECT RESPONSE CARDS

Sales Manager/Laurie Gomes, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8249 Fax: (508) 875-3701 **EAST:** Account Director/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-8278 Fax: 201-712-0430 **MIDWEST:** Account Director/Linda Clinton, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8288 Fax: (508) 875-3701 **CALIFORNIA, ALASKA, HAWAII:** Account Executive/Jason Bishop, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8009 Fax: (508) 875-3701 **WEST:** Account Executive/Maureen Roberti, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8007 Fax: (508) 875-3701

RECRUITMENT ADVERTISING SALES OFFICES

Operations Director/Cynthia Delany, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474 **NEW ENGLAND & UPSTATE NEW YORK:** Regional Manager/Nancy Percival, 500 Old Connecticut Path, Framingham, MA 01701 (800) 343-6474, Senior Account Executive/Nancy Mack, (800) 343-6474 **MID-ATLANTIC:** Regional Manager/Jay Savell, 4100 Ferncroft Lane, Bethlehem, PA 18020-7617 (610) 867-5288, Senior Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288 **SOUTH ATLANTIC:** Regional Manager/Katie Kress-Taplett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 280-5162, Product Manager/Pauline Smith (800) 343-6474 **MIDWEST:** Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executives/Nicholas Burke, Susan Hammond, (800) 343-6474 TDD: (800) 227-9437 **WEST:** Regional Manager/Christopher Glenn, 177 Bovet Road, Suite 400, San Mateo CA 94402 (415) 665-2443, Account Executives/Kate Angelone, Chris Connery, (800) 343-6474

MARKETING: Field Marketing Director/Derek E. Hulitzky, Marketing Director/Chris McGarry, Art Director/Gary Suen, Copywriter/Steve Stamates **CIRCULATION:** Vice President Circulation/Maureen Burke **PRODUCTION:** Production Director/Christopher P. Cuoco, Production Manager/Beverly Wolff **DISTRIBUTION:** Distribution Manager/Bob Wescott **RESEARCH:** IT Market Analyst/David Daoud, Research Analyst/Matt Duffy, Research Analyst/Candace D'Keefe

COMPUTERWORLD

President/CEO
Michela O'Connor Abrams

Vice President/CIO
Rick Broughton
(508) 620-7700

Vice President/Technical Recruiting Conferences
John Corrigan
(508) 820-8273

Vice President/Editor
Paul Gillin
(508) 620-7724

Senior Vice President/Corporate Marketing and Business Development
Peter C. Horan
(650) 524-7017

Vice President/Information Management Group
Scott R. Kleinman
(650) 524-7060

Vice President/Manufacturing Operations
Carolyn Medeiros
(508) 620-7733

Vice President/Enterprise Business Solutions
Ronald L. Milton
(508) 820-8661

Vice President/Strategic Circulation Operations
Eric Schmierer
(508) 820-8217

Senior Vice President/Finance
Matthew C. Smith
(508) 820-8102

INTERNATIONAL DATA GROUP

CHAIRMAN OF THE BOARD, *Patrick J. McGovern* **PRESIDENT/CEO,** *Kelly Conlin*

IDG

Computerworld is a publication of International Data Group, which informs more people world wide about information technology than any other company in the world. With annual revenues of $2 35 billion, IDG is the leading global provider of IT media, research, conferences and expositions. IDG publishes more than 290 computer newspapers and magazines and 700 book titles in 75 countries, led by Computerworld, Infoworld, Macworld, Network World, PC World, Channel World, and the " For Dummies" global product lines. IDG [illegible] the largest network of technology sites around the world through IDG net (http //www idg net), which comprises more than 225 targeted web sites in 55 [illegible] is a [illegible] leading producer of 168 computer related expositions in 35 countries and its research arm, International Data Corporation (IDC) provides comput[illegible] and analyses through 49 offices in 41 countries world wide Company information is available at http //www idg com

ADVERTISERS INDEX

ADPAC	www.adpac.com	75
BrainStorm Group	www.brainstorm-group.com	89-104
Canon	www.canon.com	36-37
CCBsure	www.ccbsure.com	29
Cisco	www.cisco.com	39
Citrix	www.citrix.com	25
Compaq Computer Corp. Desktop	www.compaq.com	9
Compaq Computer Corp. Brand	www.compaq.com	79, 81, 83, 85
Computer Associates GPS	www.cai.com	7
Data General	www.dg.com	59
Epicor Software	www.epicor.com	26-27
Ericsson	www.ericsson.com	47
Hycurve	www.hycurve.com	55
IBM Software/e-commerce	www.ibm.com	64-65
IBM Storage	www.ibm.com	107
Informix Software	www.informix.com	10
Intel	www.intel.com	C2
ISS	www.iss.net/safesuite.com	45
JD Edwards	www.jdedwards.com	11
KnowledgeStorm	www.KnowledgeStorm.com	13
Microsoft Office 2000	www.microsoft.com	21-23
Microsoft Windows 2000	www.microsoft.com	30-31
Microsoft SQL Server	www.microsoft.com	42-43
Microsoft Windows NT	www.microsoft.com	48
Navisite	www.navisite.com	69
NetObjects	www.netobjects.com	17
Prolifics	www.prolifics.com	71
Qwest	www.qwest.com	108
Red Hat Software	www.redhat.com	54
SAS Institute	www.sas.com	51, 53, 80
SGI	www.sgi com/go/visual	61
Seagull Software	www.seagullsw.com	28
Syncsort	www.syncsort.com	5
Unisys	www.unisys.com (800) 874-8647 X100	C4
UUNET	www.uunet.com	15
Veritas	www.veritas.com	76
Xerox	www.xerox.com	18-19
Xybernaut Corporation	www.xybernaut.com	C3

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here: **Address shown:** ☐ Home ☐ Business

NAME

COMPANY

ADDRESS

CITY STATE ZIP

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: **1-800-552-4431**

Outside U.S. call (740) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address - COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

NAME
TITLE
COMPANY
ADDRESS
CITY
STATE
ZIP

WEEK IN STOCKS

GAINERS ↑		LOSERS ↓	
PERCENT		**PERCENT**	
Procom Tech Inc.	21.7	Wind River Systems Inc.	-18.3
The Baan Co. N.V.	19.7	@home Corp.	-16.1
Winstar Communications Inc. (H)	19.6	ETrade Group Inc.	-15.2
Businesss Objects S.A.	19.5	Checkfree	-13.2
Oracle Corp.	15.5	Amazon.com	-12.5
Westell Technology Inc.	14.4	Safegard Scientifics	-11.2
Data General	14.1	Infoseek	-11.0
Teradyne	12.3	Computer Horizons Corp.	-10.3
DOLLAR		**DOLLAR**	
Winstar Communications Inc. (H)	9.50	@home Corp.	-20.09
Ascend Communications Inc.	9.44	Amazon.com	-14.81
Texas Instruments	8.50	America Online	-9.94
SGS-Thomson Microelectronics	7.25	Lycos, Inc.	-9.69
Qualcomm	7.06	Safegard Scientifics	-8.25
Teradyne	6.50	ETrade Group Inc.	-6.75
Applied Materials	5.69	Checkfree	-6.13
Businesss Objects S.A.	5.56	Electronics For Imaging	-5.00

J. D. Edwards May Be on Upswing

Stock price up a bit despite ERP slump

BY LAURA HUNT

J. D. EDWARDS & Co.'s share price is on the rise, and analysts have rated the stock a Hold, showing cautious optimism. Yet the company continues to lose money amid a slump in the enterprise resource planning (ERP) market.

In second quarter results released May 26, J. D. Edwards (Nasdaq:JDEC) met Wall Street's expectations, reporting revenue of $231.6 million and a net loss of $10.4 million. That day, the company's closing stock price was 19, a slight increase over previous weeks and higher than its 52-week low of 10.88. The stock's 52-week high was 49.50, in September.

J.D. Edwards isn't the only company in the ERP market that's in a relative slump. For example, saturation in the high-end customer base has prompted SAP AG (NYSE:SAP) and Oracle Corp. (Nasdaq:ORCL) to concentrate on the middle market, a traditional J. D. Edwards stronghold. The need for customers to divert resources to fix computers for year 2000 is also part of the problem, said William Chappell, an analyst at J. C. Bradford and Co. in Nashville.

INDUSTRY ALMANAC

Nonetheless, a Credit Suisse First Boston report on J. D. Edwards issued last week remains positive on the Denver-based company's longer-term prospects. It cites recent investments that put Edwards in a position to compete with larger rivals in the front-office and e-commerce areas. Those include the recent acquisitions of Numerix Ltd. (a Toronto-based vendor of Internet-enabled supply-chain planning software) and Premisys Corp. (a Chicago-based provider of engineering automation tools).

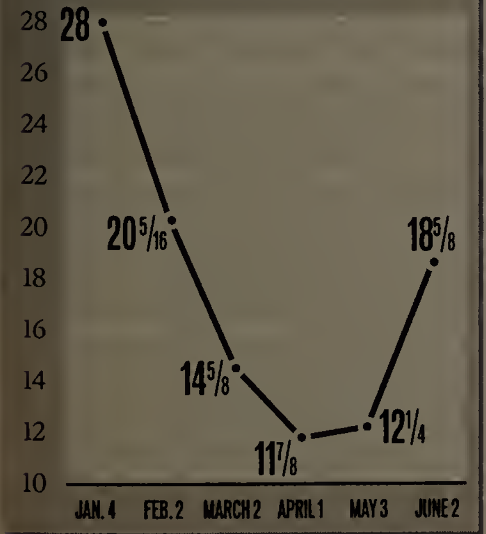
J. D. Edwards' reputation for strong customer service is also a plus that may keep competitors at bay, Chappell said.

However, the company isn't out of the woods yet. CS First Boston's report also states that its recent share price increase (see chart) may not reflect problems that could arise if the company has difficulty continuing its growth in customers and revenue. Several analyst firms, including A. G. Edwards & Sons Inc., CS First Boston and Morgan Stanley Dean Witter, have downgraded J. D. Edwards since January. Most analysts maintain a Hold rating on its stock. ▶

Stewart Deck contributed to this report.

Edwards' Uptick

Analysts say the outlook for J. D. Edwards' stock is getting better:



EXCH	52-WEEK RANGE			JUNE 4 2 PM	WK NET CHANGE	WK PCT CHANGE
SOFTWARE UP 1.1%						
ADBE	81.06	23.62	Adobe Systems Inc.	73.19	-1.38	-1.8
AZPN	56.87	6.12	Aspen Technology Inc	10.25	-0.25	-2.4
ADSK	49.43	21.62	Autodesk Inc.	24.50	-1.81	-6.9
AVID	40.87	11.06	Avid Technology	16.69	-0.06	-0.4
BOBJ	42.50	6.12	Businesss Objects S.A	34.06	5.56	19.5
CDN	36.00	10.62	Cadence Design Systems	13.31	0.38	2.9
CBTSY	63.87	6.68	CBT Group Plc.	16.75	1.50	9.8
CHKPF	56.00	10.87	Checkpoint Software	47.13	2.75	6.2
CTXS	53.75	23.12	Citrix Systems Inc	50.25	1.00	2.0
COGN	28.12	14.75	Cognos Inc.	23.09	-1.09	-4.5
CA	61.93	26.00	Computer Associates	49.25	2.06	4.4
CPWR	40.00	16.37	Compuware Corp	29.25	-1.88	-6.0
DCTM	54.50	9.37	Documentum	13.81	-0.13	-0.9
EFII	52.00	13.50	Electronics For Imaging	45.88	-5.00	-9.8
HNCS	47.12	13.75	Hnc Software	30.00	3.00	11.1
IDXC	55.75	12.43	IDX Systems	23.56	-1.75	-6.9
IFMX	14.00	3.50	Informix Software Inc.	6.94	0.19	2.8
INTU	110.75	34.18	Intuit	85.19	2.56	3.1
JKHY	55.00	26.43	Jack Henry Associates	39.00	2.88	8.0
JDEC	49.50	10.87	J.D. Edwards & Co.	19.19	0.06	0.3
LGTO	67.75	26.00	Legato Systems Inc.	56.13	1.88	3.5
MACR	53.25	12.31	Macromedia Inc.	42.63	2.81	7.1
MANU	31.50	5.25	Manugistics Group Inc.	9.94	0.91	10.0
MENT	15.06	5.43	Mentor Graphics	12.81	0.06	0.5
MSFT	95.62	41.81	Microsoft Corp.	78.25	-2.13	-2.6
NETA	67.68	10.06	Network Associates	14.50	-0.56	-3.7
GMH	63.87	30.37	Network General	52.06	-2.88	-5.2
NOVL	28.12	9.50	Novell Inc.	22.94	-0.50	-2.1
ORCL	41.18	12.25	Oracle Corp.	28.44	3.81	15.5
PMTC	36.31	8.50	Parametric Technology Corp.	13.06	-0.50	-3.7
PSFT	52.12	11.50	PeopleSoft Inc.	16.13	0.31	2.0
PIXR	66.00	27.50	Pixar	39.69	-1.19	-2.9
PLAT	34.31	9.00	Platinum Technology Inc.	29.13	0.00	0.0
RATL	35.62	10.50	Rational Software Corp.	34.44	0.50	1.5
SAP	60.12	23.75	SAP AG	32.00	-1.44	-4.3
SCUR	29.00	3.25	Secure Computing Corp	3.78	0.03	0.8
SE	48.75	20.12	Sterling Commerce Inc.	35.81	-2.44	-6.4
SSW	32.81	18.56	Sterling Software Inc.	25.94	2.00	8.4
SDRC	25.18	7.50	Structural Dynamics Research	18.94	0.75	4.1
SYBS	11.62	4.50	Sybase Inc.	9.75	0.00	0.0
SYMC	29.00	8.68	Symantec Corp.	23.25	-0.44	-1.8
SNPS	61.25	24.50	Synopsis	43.25	-1.44	-3.2
SCTC	30.87	7.81	Systems & Computer Technology	15.38	-0.63	-3.9
BAANF	45.25	6.87	The Baan Co. N.V	13.69	2.25	19.7
VNTV	29.87	5.00	The Vantive Corp.	11.31	0.25	2.3
TSAI	51.00	26.00	Trans. Sys. Arch.	32.44	0.44	1.4
VRTS	90.62	23.75	Veritas Software Corp. (H)	90.13	1.69	1.9
WIND	34.43	11.25	Wind River Systems Inc.	17.25	-3.88	-18.3
TELECOMMUNICATIONS CARRIERS UP 1.7%						
ATI	107.68	42.25	Airtouch Communications	104.38	4.13	4.1
AT	72.43	38.25	Alltel Corp.	72.38	0.94	1.3
AIT	69.93	41.50	Ameritech Corp.	66.81	1.75	2.7
ANDW	22.31	10.37	Andrew Corp.	16.00	0.56	3.6
T	64.12	32.25	AT&T	54.06	-1.94	-3.5
BCE	51.06	25.62	BCE, Inc.	47.44	1.50	3.3
BEL	61.18	40.43	Bell Atlantic	54.75	-0.38	-0.7
BLS	50.00	32.12	Bell South	45.63	-1.50	-3.2
CSN	24.93	8.50	Cincinnati Bell Inc. (H)	23.75	0.19	0.8
CMCSK	42.56	16.81	Comcast	37.81	-0.31	-0.8
CQ	39.62	21.75	Comsat Corp.	34.13	1.13	3.4
COX	44.43	20.75	Cox Communications Inc.	38.63	-0.75	-1.9
GSTRF	32.31	8.31	Globalstar Telecom. Ltd.	17.75	0.06	0.4
GTE	71.81	46.56	GTE Corp.	63.06	-0.69	-1.1
NXTL	42.50	15.37	Nextel Communications	36.50	-0.25	-0.7
SPOT	58.18	26.37	Panamsat	31.50	-0.56	-1.8
QCOM	119.75	18.87	Qualcomm	104.94	7.06	7.2
SBC	59.93	35.00	SBC Communications	52.56	1.44	2.8
FON	114.62	54.43	Sprint Corp.	112.63	-0.63	-0.6
TDS	68.37	30.62	Telephone and Data Systems	66.75	-0.63	-0.9
USW	66.00	46.81	US West	52.94	-0.44	-0.8
VIA	48.75	24.62	Viacom	40.50	1.50	3.8
WCII	58.81	10.25	Winstar Communications Inc. (H)	57.94	9.50	19.6
WCOM	94.87	39.00	MCI Worldcom Inc.	88.81	2.94	3.4
SERVICES OFF -1.2%						
ACXM	31.25	16.50	Acxiom Corp.	28.44	0.63	2.2
ACS	51.75	22.37	Affiliated Computer Servs	43.19	-0.56	-1.3
AMSY	40.25	19.25	American Mgt. Systems	34.13	0.13	0.4
AUD	46.87	31.75	Automatic Data Processing	42.94	1.38	3.3
BSYS	60.12	35.37	Bisys Group, Inc. (H)	58.88	3.81	6.9
CATP	58.37	10.62	Cambridge Technology Ptnrs	16.19	-0.88	-5.1
CEN	40.50	24.00	Ceridian	30.81	-1.81	-5.6
CBR	40.87	13.31	Ciber Inc.	19.44	-2.19	-10.1
CDO	30.87	10.75	Comdisco	23.69	-0.75	-3.1
CHRZ	44.75	9.25	Computer Horizons Corp.	16.94	-1.94	-10.3
CSC	74.87	46.25	Computer Sciences	66.31	2.25	3.5
DST	70.56	34.00	DST Systems Inc.	53.19	-0.75	-1.4
EDS	59.75	30.43	Electronic Data Systems	57.56	1.56	2.8
FDC	47.62	19.68	First Data Group (H)	45.88	0.75	1.7
FISV	40.75	24.62	Fiserv	38.69	-0.56	-1.4
IT	35.62	17.31	Gartner Group	22.50	-0.94	-4.0
KEA	60.93	17.25	Keane	28.50	-1.50	-5.0
NDC	55.25	26.18	National Data	46.00	-1.44	-3.0
PAYX	36.75	24.18	Paychex, Inc.	27.94	-0.94	-3.2
REGI	23.06	4.00	Renaissance Worldwide	7.09	-0.13	-1.7
REY	23.50	12.62	Reynolds & Reynolds	21.94	-0.38	-1.7
SFE	120.00	17.12	Safegard Scientifics	65.19	-8.25	-11.2
SAPE	82.87	24.25	Sapient Corp.	69.25	5.13	8.0
SMS	86.50	40.06	Shared Medical Systems	64.63	-1.25	-1.9
SDS	41.93	21.68	Sungard Data Systems	35.50	-0.13	-0.4
SYNT	29.00	8.68	Syntel Inc.	23.25	-0.44	-1.8
TECD	53.12	14.50	Tech Data	38.19	1.69	4.6
TSS	26.25	14.43	Total System Services, Inc	19.25	0.44	2.3
TSAI	51.00	26.00	Transaction Sys Architects	32.44	0.44	1.4
NETWORK UP 1.9%						
COMS	51.12	20.00	3Com Corp	26.31	-1.06	-3.9
ADCT	52.25	15.75	ADC Telecommunications Inc.	48.88	0.25	0.5
ANTC	34.18	11.50	Antec	29.75	0.19	0.6
ASND	102.56	32.62	Ascend Communications Inc.	100.50	9.44	10.4
BNYN	19.37	2.12	Banyan Systems Inc.	10.94	-0.19	-1.7
CS	16.00	6.62	Cabletron Systems	14.25	-0.50	-3.4
CNEBF	18.75	5.75	Call-Net Enterprises	6.81	0.06	0.9
CSCO	122.31	41.12	Cisco Systems Inc	112.31	3.94	3.6
ECILF	45.00	19.75	ECI Telecom	34.44	0.00	0.0
FORE	34.62	9.25	Fore Systems Inc.	34.50	0.19	0.5
HRS	49.00	27.31	Harris Corp.	39.00	1.38	3.7
GMH	63.87	30.37	Hughes Electronics/GM	52.06	2.88	5.2
ERICY	34.00	15.00	LM Ericsson	28.44	1.59	5.9
LU	67.00	26.68	Lucent Technologies	61.50	5.38	9.6
MADGF	6.00	1.75	Madge Networks	3.00	-0.13	-4.0
NCDI	8.93	4.25	Network Computing Dev (L)	4.63	-0.19	-3.9
NWK	17.25	7.31	Network Equipment Tech.	9.75	-0.38	-3.7
NN	39.87	15.43	Newbridge Networks	26.56	1.00	3.6
NOK	85.68	29.50	Nokia Corp	75.75	4.31	6.0
NT	79.93	26.81	Northern Telecom Ltd	78.81	4.19	5.6
PAIR	20.12	6.00	Pairgain Technologies Inc.	13.88	1.41	11.3
PCTL	11.12	4.31	Picturetel	9.19	0.56	6.5
SFA	39.75	11.75	Scientific Atlanta	33.88	1.50	-4.2
TLAB	63.93	15.68	Tellabs Inc.	58.25	1.00	1.7
USW	66.00	46.81	US West	52.94	-0.44	-0.8
VRLK	8.62	2.12	Verilink	3.38	0.13	3.8
WSTL	11.62	2.75	Westell Technology Inc.	7.94	1.00	14.4
SEMICONDUCTORS, CHIPS & EQUIPMENT UP 4.6%						
ADPT	32.62	7.87	Adaptec (H)	32.50	2.50	8.3
AMD	33.00	9.31	Advanced Micro Devices	18.06	0.00	0.0
ALTR	41.25	14.12	Altera	34.06	-0.81	-2.3
ADI	43.81	12.00	Analog Devices	40.50	2.13	5.5
AMAT	71.62	21.56	Applied Materials	60.06	5.69	10.5
ASML	50.37	12.93	ASM Lithography Holding	45.75	1.25	2.8
HRS	49.00	27.31	Harris Corp	39.00	1.38	3.7
INTC	71.87	32.87	Intel Corp.	51.75	-1.25	-2.4
KLAC	65.00	20.75	Kla Instruments	47.50	3.31	7.5
LLTC	64.12	19.56	Linear Technology	56.13	3.31	6.3
LSI	40.93	10.50	LSI Logic	38.44	1.63	4.4
MXIM	65.12	22.31	Maxim Integrated Products	54.38	2.34	4.5
MU	80.56	20.06	Micron Technology	37.94	-0.06	-0.2
MOT	88.87	38.37	Motorola	84.69	4.06	5.0
NSM	22.75	7.43	National Semiconductor	19.13	0.06	0.3
STM	128.00	35.87	SGS-Thomson Microelectronics	123.63	7.25	6.2
SLR	57.87	17.68	Solectron Corp	56.69	2.63	4.9
TER	66.50	15.00	Teradyne	59.44	6.50	12.3
TXN	117.87	45.37	Texas Instruments	116.50	8.50	7.9
UNPH	148.00	31.25	Uniphase	137.69	2.94	2.2
VTSS	59.00	17.12	Vitesse Semiconductor Corp	59.00	4.88	9.0
XLNX	54.37	14.87	Xilinx	45.63	1.88	4.3
COMPUTER SYSTEMS UP 1.8%						
AAPL	50.00	25.81	Apple Computer Inc.	47.25	3.19	7.2
ASPX	12.50	1.62	Auspex Systems	11.00	0.06	0.6
CPQ	51.25	22.25	Compaq	23.06	-0.50	-2.1
DGN	21.81	7.00	Data General	14.63	1.81	14.1
DELL	55.00	19.93	Dell Computer Corp.	33.75	-0.63	-1.8
GTW	84.50	36.12	Gateway 2000 Inc.	60.19	-0.69	-1.1
HWP	97.56	47.06	Hewlett-Packard Co.	90.25	-4.00	-4.2
HIT	78.93	40.18	Hitachi Ltd	75.38	2.38	3.3
IBM	123.00	53.00	IBM	113.75	-1.75	-1.5
MUEI	24.75	9.37	Micron	9.88	-0.13	-1.3
MOT	88.87	38.37	Motorola	84.69	4.06	5.0
NATI	38.12	17.50	National Instruments Corp	37.25	-0.63	-1.7
NCR	55.75	23.50	NCR	41.81	2.56	6.5
NIPNY	60.50	31.00	NEC	53.75	-1.13	-2.1
PRCM	13.25	3.43	Procom Tech Inc.	5.25	0.94	21.7
SQNT	17.00	5.68	Sequent Computer Systems	12.63	-0.50	-3.8
SGI	20.87	7.37	Silicon Grafix	12.94	0.63	5.1
SNE	104.31	60.25	Sony	89.38	-4.38	-4.7
SUNW	72.50	19.18	Sun Microsystems	57.56	-2.19	-3.7
TEXM	6.63	2.00	Texas Micro (H)	6.63	0.31	5.0
TRCO	4.87	0.37	Tricord Systems	2.69	-0.06	-2.3
UIS	39.00	17.62	Unisys (H)	38.44	0.56	1.5
INTERNET OFF -7.2%						
AMZN	221.25	13.75	Amazon.com	103.81	-14.81	-12.5
AOL	175.50	17.25	America Online	107.06	-9.94	-8.5
ATHM	198.00	23.50	@home Corp.	105.03	-20.09	-16.1
CKFR	69.12	5.75	Checkfree	40.38	-6.13	-13.2
CYCH	24.87	5.87	Cybercash, Inc.	13.31	0.06	0.5
EDFY	16.87	3.81	Edify Corp.	11.31	-0.19	-1.6
EGRP	72.25	2.50	ETrade Group Inc.	37.75	-6.75	-15.2
SEEK	100.00	14.87	Infoseek	37.38	-4.63	-11.0
LCOS	145.37	20.06	Lycos, Inc.	89.75	-9.69	-9.7
OMKT	27.00	4.25	Open Market, Inc	11.63	-0.75	-6.1
OTEX	42.50	10.00	Open Text Corp.	29.38	-0.38	-1.3
PSIX	73.75	8.37	PSINet Inc.	44.00	0.63	1.4
SDTI	30.62	5.43	Security Dynamics	17.94	-0.81	-4.3
SPYG	32.25	8.62	Spyglass Inc.	17.75	-1.94	-9.8
YHOO	244.00	25.12	Yahoo Inc.	138.81	-0.56	-0.4
STORAGE & PERIPHERALS OFF -0.2%						
ADPT	32.62	7.87	Adaptec Inc. (H)	32.50	2.50	8.3
APCC	27.75	13.12	American Power Conversion	18.69	-0.94	-4.8
CANNY	25.93	17.00	Canon Inc.	24.75	-0.63	-2.5
DBD	39.87	19.12	Diebold Inc.	27.81	0.00	0.0
EK	88.93	60.81	Eastman Kodak Co.	67.81	0.13	0.2
EMC	67.50	20.43	EMC	49.94	-0.13	-0.2
IOM	10.18	2.93	Iomega	4.31	-0.25	-5.5
LXK	145.00	50.75	Lexmark International (H)	137.19	-0.81	-0.6
QNTM	29.93	10.81	Quantum	18.50	-1.44	-7.2
SEG	44.25	16.12	Seagate Technology	31.00	0.75	2.5
STK	51.12	17.25	Storage Technology	19.69	-0.13	-0.6
TEK	38.18	13.68	Tektronix	23.44	0.38	1.6
XRX	63.93	39.00	Xerox	59.56	3.44	6.1

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

Copyright Nordby International, Inc., Boulder, Colo. (nordby.com) This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and *Computerworld* assume no liability for inaccuracies. For information on Nordby's customized financial research services, call (303) 938-1877.

How to Contact Computerworld

TELEPHONE/FAX

Main phone number .... (508) 879-0700

All editors unless otherwise noted below

Main fax number .... (508) 875-8931

24-hour news tip line .... (508) 820-8555

E-MAIL

Our Web address is **www.computerworld.com.**

All staff members can be reached via e-mail on the Internet using the form: **firstname_lastname@computerworld.com.**

All IDG News Service correspondents can be reached using the form: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.**

Include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Phone .... (800) 552-4431

E-mail .... circulation@cw.com

Back Issues .... (508) 820-8167

REPRINTS/PERMISSIONS

Phone .... Ray Trynovich (717) 560-2001, ext. 24

E-mail .... sales@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor In Chief	Paul Gillin (508) 820-7724
Executive Editor	Maryfran Johnson (508) 820-8179

DEPARTMENT EDITORS

News Editor	Patricia Keefe (508) 820-8183
Business Editor	Kevin Fogarty (508) 820-8246
Technology Editor	Robert L. Scheier (508) 820-8226
Assistant News Editor	Michael Goldberg (508) 620-7789
Assistant News Editor	Mitch Betts (202) 347-6718
Assistant Business Editor	Anne McCrory (508) 820-8205
Assistant Technology Editor	Steve Ulfelder (508) 620-7745
Online News Editor	Sharon Machlis (508) 820-8231
Industry Editor	Joseph E. Maglitta (508) 820-8223

REPORTERS

Labor issues, IS careers, IT services, systems integration, outsourcing, health care industry	Barb Cole-Gomolski (760) 728-8858
Intel servers, thin clients, travel industry	Stacy Collett (703) 404-1409
Databases, data warehousing, transportation industry	Stewart Deck (508) 820-8155
E-mail, groupware, workflow, document and knowledge management, food processors/supplier industry	Dominique Deckmyn (650) 524-7112
New products, multimedia, storage	Nancy Dillon (650) 524-7114
Microsoft, NT, BackOffice, Novell, publishing/advertising industries	Sharon Gaudin (508) 820-8122
Mobile computing, desktop systems, aerospace, defense contractors	Matt Hamblen (508) 820-8567
Security, encryption, viruses	Ann Harrison (508) 820-8182
IT management, year 2000, financial services	Thomas Hoffman (914) 988-9630
E-commerce, business, energy/utilities	Julia King (610) 532-7599
Network, systems management food industry, retail and restaurant	Sami Lais (301) 270-1427
Microsoft, investigative reports	Kim S. Nash (773) 871-3035
Computerworld online	Kathleen Ohlson (508) 820-8215
Application development, Linux, desktop applications, retailers	David Orenstein (650) 524-7116
Java, intranets, E-commerce technologies, pharmaceutical industry	Carol Sliwa (508) 628-4731
Client/server software, Unix applications, process manufacturing	Craig Stedman (508) 820-8120
State/Federal government, antitrust, legal issues, politics	Patrick Thibodeau (202) 333-2448
Midrange and mainframe hardware, Unix, heavy manufacturing	Jaikumar Vijayan (508) 820-8220
Internetworking, telecommunications, automotive industry	Bob Wallace (508) 820-8214

OPINIONS

Staff Columnist	Frank Hayes (503) 252-0100
Columns Editor	Allan E. Alter (508) 620-7714

FEATURES EDITORS

IT management, leadership	Allan E. Alter (508) 620-7714
IT management, year 2000	Rick Saia (508) 820-8118
Field Report	James Connolly (508) 820-8144
Executive Technology	Cathleen Gagne (508) 620-7729
Reviews	Russell Kay (508) 820-8175
Field Report, reviews, Emerging Companies	Cynthia Morgan (508) 820-8177
IT Careers	David B. Weldon (508) 820-8166
IT Careers	Mari Keefe (508) 628-4906
QuickStudy	Stefanie McCann (508) 820-8274
Special Projects	Amy Malloy (508) 620-7754

FEATURES WRITERS

IT management	Kathleen Melymuka (508) 628-4931
Business, technology topics	Gary H. Anthes (202) 347-0134
Technology, product reviews	Kevin Burden (508) 620-7717

RESEARCH

Lorraine Cosgrove, **research manager;** Laura Hunt, **librarian, research analyst;** Keith Shaw, **graphics coordinator**

COPY DESK

Ellen Fanning, **managing editor/production** (508) 820-8174; Jamie Eckle, **assistant managing editor/production;** Pat Hyde, **assistant managing editor/special projects;** Jean Consilvio, Julie Dennis, Tom Gaudet, Adam Parez, Bob Rawson, **copy editors.**

GRAPHIC DESIGN

Tom Monahan, **design director** (508) 820-8218; Stephanie Faucher, **art director/features;** Mitchell J. Hayes, **art director/news;** John R. Brillon, Nancy Kowal, David Waugh, Mary Beth Welch, **associate art directors;** April O'Connor, **graphic designer;** Rich Tennant, John Klossner, **cartoonists.**

ADMINISTRATIVE SUPPORT

Linda Gorgone, **office manager** (ext. 8176); Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139); Chris Flanagan (650) 524-7111, **editorial assistants.**

COMPUTERWORLD ONLINE

Johanna Ambrosio, **director;** Sharon Machlis, **online news editor** (508) 820-8231; Kathleen Ohlson, **reporter** (508) 820-8215; Jeremy Selwyn, **online services manager;** David Ramel, **senior copy editor;** John Pallozzi, **Web developer;** Lisa Davidson, **online researcher;** Aaron Bishop, **audio engineer.**

CONTRIBUTING COLUMNISTS

Joe Auer, James Champy, John Gantz, Peter G. W. Keen, Bill Laberis, David Moschella, Fran Quittel, Paul A. Strassmann, Don Tapscott, Ed Yourdon

COMPANIES IN THIS ISSUE

Page number refers to page on which story begins. Company names can also be searched at
www.computerworld.com

3COM CORP. 84,85
A-DEC INC. 8
A. G. EDWARDS & SONS INC. 32
ADAPTEC INC. 84
ADITI CORP. 20
AETNA U.S. HEALTHCARE 81
AKRON EAR NOSE AND THROAT ASSOCIATES 54
AKZO NOBEL NV 60
ALEX. BROWN INC. 6
ALLIEDSIGNAL INC. 12
AMAZON.COM INC. 6,50
AMD INC 16
AMDAHL CORP 1
AMERICA ONLINE INC. 32
AMERICAN ELECTRIC POWER CO 68
AMERICAN PETROLEUM INSTITUTE 52
APPLE COMPUTER INC. 44
ARBORTEXT INC 78
ASSOCIATION OF TRIAL LAWYERS 35
AT&T CORP 32,58
AUTOZONE INC 81
BAAN CO 8
BANC ONE CORP 14
BANK OF AMERICA SECURITIES 1
BANYAN SYSTEMS 126
BARNES & NOBLE INC 6
CNN.COM 50
BLUESTONE SOFTWARE INC 78
BORDERS ONLINE INC 6
BORLAND INTERNATIONAL INC 88
BRISTOL TECHNOLOGY INC 4
BROADBASE INFORMATION SYSTEMS INC 78
BROADVISION CORP 85
BUREAU OF LABOR STATISTICS 56
BUSINESS RESOURCE GROUP 85
CABLETRON SYSTEMS INC 14,84
CALCO EXPRESS INC 52
CAMBRIDGE TECHNOLOGY PARTNERS INC. 62
CARNEGIE MELLON UNIVERSITY 14
CDNOW INC. 50
CENTER FOR APPLIED SPECIAL TECHNOLOGY 44
CHARLES SCHWAB & CO. 20
CIMI CORP. 1
CISCO SYSTEMS INC. 16,32,84,85
CLIENT/SERVER LABS INC 106
COGNOS INC. 53
COLLABORATIVE STRATEGIES LLC 105
COMMUNICATIONS WORKERS OF AMERICA 4
COMPAQ COMPUTER CORP. 12,82
COMPASS AMERICA INC. 68
COMPUTER ASSOCIATES INTERNATIONAL INC 14
COMPUWARE CORP 6
CREDIT SUISSE FIRST BOSTON 32,123
CROSSWORLDS SOFTWARE INC. 84
CTB INC. 24
DAMGAARD A/S 78
DELL COMPUTER CORP 34,79,106
DELOITTE & TOUCHE CONSULTING GROUP 6
DELPHI GROUP INC 85
DIALOGIC CORP 32
DOCUMENTUM INC. 85
DOUBLECLICK INC 41
DUKE ENGINEERING & SERVICES 83
EGGHEAD.COM 34
ELECTRONIC DATA SYSTEMS CORP. 12,62
ENTERPRISE APPLICATIONS CONSULTING 8
EOCNET.COM 8
EQUIFAX INC 20
ETRADE GROUP INC 50
EUROPEAN COMMISSION 29
EVANSTON NORTHWESTERN HEALTHCARE 54
EXTRICITY SOFTWARE INC. 84
FATBRAIN.COM INC. 112
FOX CORP. 62
FEDERAL DEPOSIT INSURANCE CORP. 24
FEDERAL EXPRESS CORP. 41
FEDERAL RESERVE BANK OF SAN FRANCISCO 24
FEDERAL RESERVE BOARD 58
FINANCIAL EXECUTIVES INSTITUTE 60
FIRST UNION CORP 14
FLEET FINANCIAL GROUP 14
FORD MOTOR CO. 6
FORE SYSTEMS INC. 84
FORRESTER RESEARCH INC. 8,58,105
FRANK AUDIODATA 41
FUJITSU LTD. 1
GALLUP ORGANIZATION 24
GANYMEDE SOFTWARE INC. 84
GARTNER GROUP INC. 14,50,52,84
GATX CAPITAL CORP. 53
GENERAL ELECTRIC CO. 86
GENERAL MAGIC INC. 88
GIGA INFORMATION GROUP INC. 16,66,83
GRAYBAR ELECTRIC CO 1
HARVEY MUDD COLLEGE 70
HENRY J. KAISER FAMILY FOUNDATION 46
HEWLETT-PACKARD CO. 6,82,83
HITACHI DATA SYSTEMS INC 1
HITACHI NSA 83
IBM 1,6,11,16,20,70,81,82
IBM GLOBAL FINANCING 53
IBM GLOBAL SERVICES 16
INDUSTRY DATA EXCHANGE ASSOCIATION 1
INFOLIANT CORP. 14
INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA 8
INFORMIX CORP 11,81
INGRAM BOOK GROUP 6
INLAND PAPERBOARD AND PACKAGING INC 83
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS INC. 56
INTEL CORP 18,32,82
INTERNATIONAL DATA CORP 4,32,105,126
INTERNATIONAL ORACLE USERS GROUP 8
INTERNET SECURITY SYSTEMS INC 16
IONA TECHNOLOGIES PLC 12
IXOS SOFTWARE, INC. 53
J. C. BRADFORD AND CO. 123
J. D. EDWARDS & CO. 123
KMART CORP. 41
L. L. BEAN INC. 50
LOTUS DEVELOPMENT CORP. 88,105
LUCENT TECHNOLOGIES INC. 32
MCI WORLDCOM INC. 1,16,32
MCKINSEY & CO. 50
MCKINSEY RESEARCH INSTITUTE 58
MERIDIEN RESEARCH INC. 12,20
MERRILL LYNCH & CO. 20,34,66
MERRILL LYNCH GLOBAL SECURITIES 32
META GROUP INC. 1,53,54
MICROSOFT CORP. 1,4,8,14,24,78, 79,82,84,88,106
MIT 24,34
MOBIL CORP. 52
THE MOTLEY FOOL 34
MOTOROLA INC. 41
MP3.COM INC. 34
MTI TECHNOLOGY CORP 82
NASD 86
NASDAQ STOCK MARKET INC. 12
NET PERCEPTIONS INC. 34
NETBALANCE INC. 78
NETSCAPE COMMUNICATIONS CORP. 20,24
NEW YORK STOCK EXCHANGE INC 12,126
NORTEL NETWORKS. 32,84,85
NORTH ARUNDEL HOSPITAL 52
NOVELL INC. 82
OBJECT MANAGEMENT GROUP 12
OBJECTFOCUS INC. 112
ONE STEP LLC 88
OPTIKA INC. 11
ORACLE CORP 8,12,123
PACIFIC MUTUAL LIFE INSURANCE CO 1
PALM COMPUTING INC. 54
PENCOM SYSTEMS INC 56
PEOPLESOFT INC. 78
PHILIP MORRIS INC 78
PILOT NETWORK SERVICES INC 86
PITA GROUP 14
PRATT & WHITNEY AIRCRAFT 79
PRICEWATERHOUSECOOPERS. 8
PURDUE UNIVERSITY 60
R. R. DONNELLEY & SONS CO 4
RAMP NETWORKS INC. 84
RIGHT NOW TECHNOLOGIES INC. 78
RIVERBED TECHNOLOGIES 54,84
ROCHESTER INSTITUTE OF TECHNOLOGY 70
RX2000 SOLUTIONS INSTITUTE 52
RYAN, BECK & CO. 50
SAM HOUSTON STATE UNIVERSITY 70
SAN FRANCISCO GENERAL HOSPITAL 46
SANFORD C. BERNSTEIN & CO. 14
SANOFI PHARMACEUTICALS INC. 62
SANS INSTITUTE 20
SAP AG 8,14,32,84,85,123
SAP AMERICA INC. 53
SAS INSTITUTE INC. 53
SEARS, ROEBUCK AND CO. 14,81
SECURITIES AND EXCHANGE COMMISSION 66
SECURITIES INDUSTRY ASSOCIATION 52
SERVICE MERCHANDISE 112
SILICON GRAPHICS INC. 83
SKYTEL CORP 32
SMALL BUSINESS ADMINISTRATION 35
SONY CORP. 83
SONY ELECTRONICS INC. 83
SPRINT CORP 32
SPROUT INC. 8
ST. JOSEPH'S HOSPITAL 52
STORAGE TECHNOLOGY CORP. 50
STRATEGIC RESEARCH CORP 53
SUMMIT STRATEGIES INC 1
SUN MICROSYSTEMS INC. 44,82
SURETRADE INC. 20
SYBASE INC 106
SYMANTEC CORP 106
TANGRAM ENTERPRISE SOLUTIONS INC. 83
TECHNOLOGY BUSINESS RESEARCH INC 12
TELECHOICE INC 4
TEXAS INSTRUMENTS INC 70
THE BOEING CO 12
THE BURTON GROUP CORP 20
THE DELPHI GROUP 105
THE HOME DEPOT INC. 11
THE NATIONAL ASSOCIATION OF SECURITIES DEALERS INC 12
THE OBJECT PEOPLE 112
THE OPEN GROUP 12
THE PRUDENTIAL INSURANCE COMPANY OF AMERICA 53
THE READER'S DIGEST ASSOCIATION INC. 50
THE THOMSON CORP. 85
THE YANKEE GROUP 1
THESTREET.COM 34
THOMAS & BETTS CORP 1
TIVOLI SYSTEMS INC. 52,83
TIVOLI SYSTEMS INC. 83
TOWERGROUP 14,20
TRACE CENTER AT THE UNIVERSITY OF WISCONSIN 44
TRIDENT DATA SYSTEMS 86
TRINITY REGIONAL HEALTH SYSTEM 84
TROJAN TECHNOLOGIES INC. 8
U.S. BUREAU OF RECLAMATION 79
U.S. DEPARTMENT OF JUSTICE 24
U.S. FOOD AND DRUG ADMINISTRATION 52
U.S. GENERAL ACCOUNTING OFFICE 52
UNISYS CORP. 66
UNIVERSITY OF CALIFORNIA AT SAN FRANCISCO 46
UNIVERSITY OF PENNSYLVANIA 58
US BANCORP PIPER JAFFRAY 16
VIGNETTE INC 85
VIRTUAL VINEYARDS 112
VISA INTERNATIONAL INC 8
VISIONTEK INC 86
WACKER SILICONES CORP 66
WASHINGTON ALLIANCE OF TECHNOLOGY WORKERS 4
WAWA INC 62
WORLD WIDE WEB CONSORTIUM 44
WRQ INC 52
XEROX CORP 58
YAGO SYSTEMS INC 14
ZONA RESEARCH INC. 78

Continued from page 1

Extranet Sparks Industry Savings

In another highly unusual move, MCI will furnish free to extranet users all the necessary hardware and software to transmit EDI messages over the frame-relay network.

"Most extranets haven't taken that step," said Tom Nolle, president of Cimi Corp., a Voorhees, N.J.-based network consulting company. "The reduction in costs for EDI alone will be significant" for most companies, Nolle added.

The industry association opted to use a frame-relay network instead of the Internet for reasons of reliability and predictability, said John Haluska, CIO at $2 billion Thomas & Betts Corp. in Memphis.

"We had to think about what would happen if all of a sudden the Internet goes down on the last day of the quarter because some college kid decides to play a prank," Haluska said.

Other advantages a dedicated managed network offers are faster transmission speeds and the ability to prioritize data traffic, such as purchase orders over streaming video applications, he said.

Industry United

Composed of electrical manufacturers and distributors, the industry association was formed last year to create a single industrywide data warehouse that lets thousands of trading partners electronically exchange standardized product, packaging and pricing data [CW, April 27, 1998].

Before the data warehouse, business-to-business e-commerce was severely limited because the industry lacked a common language to describe the more than 1 million parts it produces and sells. A $2 dimmer switch might go by a dozen different names and identification numbers.

Thomas & Betts, for example, needed to notify each of its 650 distributors separately of every specification and pricing change to its line of 130,000 products.

Now, manufacturers will use the extranet to continually update the warehouse, describing everything from a product's name to the cubic dimensions of its packaging in standard, consistent terms.

"The bottom line is that the manufacturers' data is the same data we'll have in our computer systems. Our business systems will be synchronized, so automated transactions will flow more smoothly with fewer errors," said Dave Ursetto, marketing manager at Chicago-based ESCO, a unit of WESCO Distribution Inc. ◗

Continued from page 1

Microsoft

cations, cable and other consumer-oriented Internet companies.

Such consumer investments probably haven't been pulled from the kitty for corporate products, said Dwight Davis, an analyst at Summit Strategies Inc. in Seattle.

The upcoming Windows 2000, for example, is one of the most expensive products Microsoft has ever made, Davis said. "Microsoft has a substantial reservoir of funds in research and development each year," he said, and so doesn't have to skimp in one product area to boost efforts in another.

Microsoft is expected to spend $3 billion on R&D this year (see chart, page 1). Yet when and how might IT see benefits trickle down from Microsoft's consumer spending?

Microsoft says the deal will benefit IT by, for example, ultimately making better, faster networks available to transmit data.

Translating technology from consumer to corporate products, and vice versa, will be difficult because the mind-sets of the users are so different, said Paul Dravis, an analyst at Bank of America Securities, a brokerage in San Francisco.

"In a corporate environment, there's more tolerance and a beta-test process. Consumers don't work like that," Dravis said. Rather, they want a simple, working product the first time and lack patience for buggy software, he said.

Finding Their Niches

Some consumer-oriented products are already finding IT niches. Windows CE, the stripped-down version of Windows, runs on handheld computers used by both kinds of customers.

Likewise, streaming video and audio products that today are sent to WebTV users who surf the Web on their TVs could be tomorrow's substitute for cumbersome videoconferencing systems used in corporations, Summit's Davis said.

Analysts said one key lesson Microsoft could learn from its consumer initiatives and apply to its IT work is scalability.

Windows NT is frequently dinged by some users and analysts as unable to support as many users and applications as Unix rivals. Meanwhile, Microsoft claims to support 30 million users on Hotmail, its Web-based e-mail system.

"If they could study what works and transfer that to the products that need it, that could end up being a good experience for Microsoft," said Steve Robins, an analyst at The Yankee Group in Boston.

At least one IT manager is optimistic that if Microsoft makes big inroads with casual home users, it will pay off for Microsoft's corporate customers.

"We could ... stream some media down there [to users' homes] and have it appear on WebTV and sell insurance," said Cameron Cosgrove, an IT manager at Pacific Mutual Life Insurance Co. in Newport Beach, Calif. Pacific Mutual is a big Microsoft shop; it runs Windows NT 4.0 and plans to deploy Windows 2000.

"It could be an advantage for us if there's a lot of Microsoft technology on consumer machines," Cosgrove said. ◗

How the Mainframe Rivals Stack Up

VENDOR	PRODUCT	CLAIMED PEAK PERFORMANCE	COMMENTS
IBM	S/390 G6	1,600 MIPS	Up to 12 processors
Hitachi	Pilot P9	1,700 MIPS	Up to 13 processors
Amdahl	Millennium 800	914 MIPS	Up to 12 processors

Continued from page 1

Amdahl

formance estimates of 1,075 MIPS, a 12-processor Millennium 800 is being rated at 914 MIPS. A uniprocessor system at 112 MIPS is below the original rating of 122 MIPS, according to Carol Stone, director of server marketing at Amdahl. Stone said the performance modeling estimates didn't include some design changes, so the numbers were off.

Word of the discrepancy comes as Amdahl unveils mainframes tuned to compete with high-end systems from IBM and Hitachi Data Systems Inc. Both vendors offer systems based on IBM's Generation 6 CMOS technologies that exceed 1,600 MIPS.

Amdahl's new 2000 series will support up to 16 CMOS processors from Japanese parent Fujitsu Ltd. First editions, due in the third quarter, will reach 1,600 MIPS. A second edition, due to ship in the first quarter next year, will exceed 2,000 MIPS.

Big Pricing Gap

For current users of the 800 series, however, the gap between what Amdahl estimated and the new performance rating could have a substantial impact in terms of software and hardware costs. Mainframe software licenses are typically tied to the overall MIPS rating of a system — the higher the rating, the higher the software fees.

"With this kind of performance differential, it is safe to assume that a number of [Amdahl's] clients have overpaid for their mainframe software," said Colin Rankine, an analyst at Meta Group Inc. in Stamford, Conn.

As a result, "Amdahl has put customers in the unusual position of having to go to their software vendors and ask for their money back," said Cheryl Watson, president of Watson and Walker, a mainframe performance-tuning consultancy in Sarasota, Fla.

The problem is that, though Amdahl may have control over how it reimburses customers for the hardware, it has no such control over the software vendors, analysts said.

"The onus would be on the customer to do something about it," agreed Alan Bain, director of systems engineering at Blue Cross/Blue Shield of Minnesota in St. Paul. The company recently implemented an enterprise resource planning application on Amdahl's Millennium 700 mainframes and has no immediate upgrade plans. "But I would probably be a bit upset if I was one of the customers," impacted by the discrepancy, Bain added.

The best approach would be to negotiate discounts on future software fees, said Dan Kaberon, parallel sysplex manager at Hewitt Associates Inc., a large IBM mainframe user and human resources outsourcer in Lincolnshire, Ill. "The thing to do would be to call them up and say, 'We overpaid through no fault of ours or yours. ... Let's see if we can negotiate a way to even that out,' " Kaberon said.

Each vendor uses its own benchmarks, said Mike Kahn, an analyst at The Clipper Group Inc. in Wellesley, Mass. "It's not unusual for vendors to give away or fall short of their estimates a bit," Kahn said. "But that process failed big-time for Amdahl in this case." ◗

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697 CANADIAN POSTMASTER Please return undeliverable copy to PO Box 1632, Windsor, ON N9A 7C9 Computerworld (ISSN 0010-4841) is published weekly except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass 01701-9171. Copyright 1999 by Computerworld Inc. All rights reserved Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed Back issues, if available, may be purchased from the circulation department. Photocopy rights. permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970 Reprints (minimum 100 copies) and permission to reprint may be purchased from Ray Trynovich, Computerworld Reprints, c/o Reprint Management Services, 147 West Airport Rd., PO Box 5363, Lancaster, Pa . 17606-5363, (717) 560-2001, ext. 24 Fax (717) 560-2063 Web site: www.rmsreprints.com. E-mail: sales@rmsreprints.com. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $4 a copy U.S. – $48 a year; Canada – $110 a year, Central & So America. $150 (surface) a year; Europe – $295 a year, all other countries – $295 a year Subscriptions call toll free (800) 552-4431. POSTMASTER. Send Form 3579 (Change of Address) to Computerworld. Box 2044 Marion, Ohio 43305.

FRANK HAYES/FRANKLY SPEAKING

This time, readers get their say

READERS WRITE — and they usually *are* right, too. "I'd bet that at nearly every business you cited in your column, 'Set your sites big' [CW, June 1], some poor, bedeviled IS person tried to warn management they were headed for trouble and were told, 'We can't afford to spend money just in case the [Web site] workload is higher than expected,' " wrote one systems analyst. "Since IS could not absolutely, positively guarantee the worst case would come to pass, the bean counters ruled. After the systems crashed, management once again grumped about those darned IS people who can never get it right."

True enough. Hmm. What bean counters fear and respect most are dollar signs. Maybe what we need are rigorous projections of what an underpowered site costs the corporation — both in IT effort and in lost business and embarrassment.

Lots of you appreciated the advice to remind management that you kept PCs clear of the Chernobyl virus [CW, May 3]. "We bust our butts to [ensure] others can just come in and hit their keys, and when nothing [bad] happens because of [our] diligence and planning, we get ignored by *The Wall Street Journal*," wrote one reader.

"We really must remember that our return on investment for safeguards occurs when the disaster is avoided," another said.

But not everyone agreed. "I think any IT manager who uses virus-susceptible systems for mission-critical applications should experience a severe pay cut, if not a trip to the unemployment office," wrote a university computer center director. "So I don't have to bother my top management with tales of how I overcame viruses."

OK, show of hands: How many IT people have the power to take users' virus-susceptible PCs away from them? And how many users *don't* define their PC use as mission-critical? We can't control the hardware and software they use; we've just got to try to protect them.

Then there are users like the reader in Hong Kong who pulled his office back from Chernobyl catastrophe. "I was the first one to switch on a machine at 8 a.m., and it went blank," he wrote. "This gave me sufficient time to warn everybody in the office not to touch [their PCs] until we got our acts together to make the machines safe." That's the labor IT's *really* short on: smart, tech-savvy users.

> *Now, readers get the last word. Oh, the horror!*

Correction time: I called on Bill Gates to follow the lead of Bill Boeing, whose 1930s Seattle high-tech Goliath broke itself up into today's Boeing, United Technologies and United Air Lines [CW, May 10]. But the breakup wasn't Bill Boeing's idea. "He resigned his chairmanship and left the aviation business because of it," pointed out another reader. "While Bill Gates is no golden boy, his contributions, along with many others', have been dramatic and widespread. [If Gates quit], this would be a devastating loss for the computer industry."

Finally, I'm still getting complaints for suggesting many IT people are Luddites who fear the technology users drag in [CW, April 12]: "After a while, the endless stream of brilliant ideas and new and wonderful software 'found' by users forces you into a [bureaucratic] attitude; you know no matter how fast you are, there will always be another idiot standing in front of you. Keep that up for a while and . . . battle fatigue . . . burnout . . . and (the horror) columnist!"

I *think* I've just been insulted . . . ▸

Hayes, Computerworld*'s staff columnist, has covered IT for 20 years. You'd think by now he'd know better than to read all the mail readers send him at frank_hayes@computerworld.com — but he does.*

SHARK TANK

THAT SOUND YOU HEAR from New York is a massive, CIO sigh of relief. Last week, the New York Stock Exchange postponed the introduction of extended trading hours (see story, page 12). Sharky hears Wall Street IT types weren't exactly heartbroken: What with Y2K and a shift in the way they price stocks (they're moving from fractions to decimals), the last thing brokerage CIOs need is another project fraught with batch processing and staffing headaches.

YOU KNOW FEDERAL Web sites are being hacked like crazy. No skin off your back, right? Guess again. During last week's attack on the U.S. Department of Energy's Brookhaven National Laboratory, the hackers thanked youngsters for occupying the feds: "While you have been keeping the FBI . . . busy tracking down 14-year-olds, we have spent our time burrowing deep within corporate America." Gulp.

THIS WEEK'S Common Sense Award goes to John Morency of consulting outfit Renaissance Worldwide. "Network managers break out in a cold sweat when vendors talk about trashing PBXs for IP telephony," Morency said, "because PBXs have long been in place and have performed well as is." Hear! Hear!

SERVICES WITH A SMILE A Friend of the Tank hears Banyan Systems is due for a makeover. Goes into the clinic (maybe this month) a gimpy directory software vendor . . . and comes out a services company focused on enterprise directory consulting. Why not? Banyan already gets half its revenue from services, whose margins warm bean counters' tiny hearts.

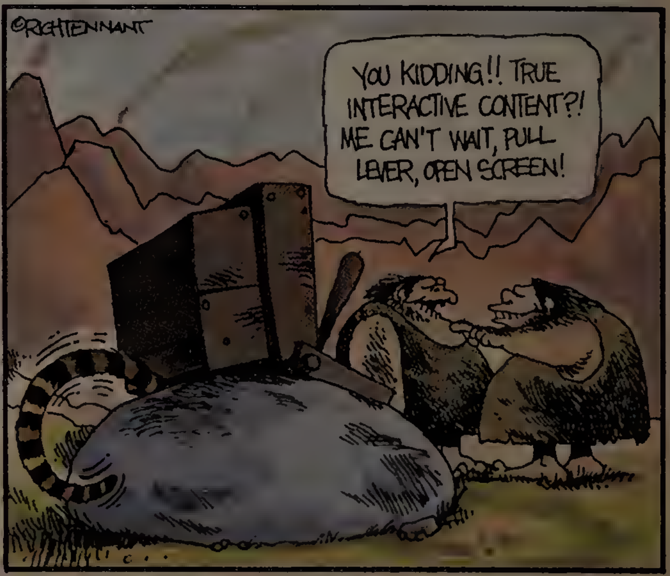
OF COURSE, BANYAN may want to give Oracle a call first. Last week, Larry Ellison said his gang "screwed up" by trying to hog all the ERP consulting business. Result? Classic freeze-out: The Big 5 don't recommend Oracle software to a whole lot of their clients. Larry & Co. have some fences to mend.

COZY RETREAT. GREAT VIEW. GLOWS. Is there anything you can't buy on the Internet? If you're in the market for a slightly used nuclear power facility, try *www.buynuclear.com/mymain.html.* You can kick the tires on the Maine Yankee Nuclear Power plant in Wiscasset.

SO A POST OFFICE EMPLOYEE looks at International Data Corp. analyst Eileen O'Brien's title, which is director, thin client program. Slight misunderstanding: The postal worker "thought I led an exercise class," O'Brien said. Sharky, who's hardly ever mistaken for an aerobics instructor, admits to being a tad envious.

Got any plump morsels involving bloated bosses, corporate corpulence, piggish projects? Send anonymous e-mail to the Tank: **sharky@computerworld.com**.

The 5th Wave


©RICHTENNANT
YOU KIDDING!! TRUE INTERACTIVE CONTENT?! ME CAN'T WAIT, PULL LEVER, OPEN SCREEN!

E-mail Rich Tennant at the5wave@tiac.net

$500 Manufacturer Rebate thru June 30,1999

Today I wore a PC at work.

INTRODUCING THE PC FOR THE REST OF YOUR WORKFORCE:

FREE Video Cam and Video Software with purchase of head mounted display. Offer ends June 30, 1999 For details visit www.xybernaut.com/af0799

People who work IN TIGHT SPACES OR HIGH PLACES. PEOPLE WHO CAN'T AFFORD TO LOOK AWAY OR LET GO. ANYONE WHOSE PRODUCTIVITY CAN BE MULTIPLIED BY HANDS-FREE, ON-THE-FLY ACCESS TO INFORMATION, COMMUNICATIONS, OR FILING OF REPORTS.

This new PC is the Xybernaut® Mobile Assistant® IV. A computer that's small enough to wear on a belt or vest...works with voice recognition or one touch commands...can hitch a head mounted monitor/display...and runs any Windows® software. Anyone anywhere can access manuals, specs, drawings, documents and mixed media...complete and file forms, reports, exams and orders...and send and receive e-mails and video–hands-free and distraction-free. Comfortable. Rugged. Powerful. And there's nothing else like it, as proven by Fortune 500 companies already putting Xybernaut MAs to work. Now, learn how you can take productivity where it's never gone before, simply by giving your people something new to wear to work: the Xybernaut Mobile Assistant IV.

JOHN
MASTER TECHNICIAN

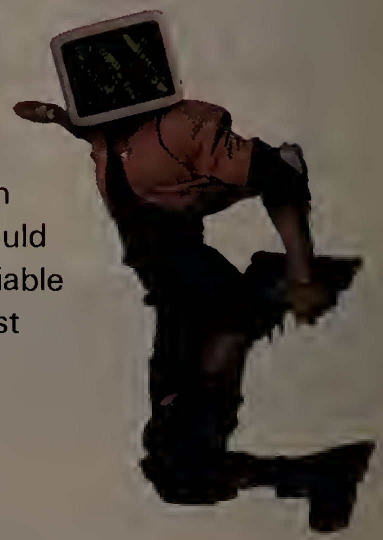
XYBERNAUT®
The leader in wearable computing

12701 Fair Lakes Circle
Suite 550
Fairfax, Virginia 22033

For more information:
Telephone: 703-631-6925
Fax: 703-995-3662
E-mail: sales@xybernaut.com
NASDAQ symbol: XYBR

www.xybernaut.com/af0799

It's not that we can't stop working on a client's problem. It's just that we hate to quit when we're on a roll.



On Wall Street, momentum is everything. That's why we helped design and run a benchmark study to prove our Microsoft® Windows NT®-based servers can keep The Nasdaq Stock Market going, even in a tidal wave of transactions. One billion shares later, it was still going strong. In fact, we showed it could handle two billion shares traded and scale up to four billion per day. Now, Nasdaq is installing tough, reliable Unisys Aquanta™ servers based on the Intel® Pentium® II Xeon™ processor. Because when the fastest growing stock market in the United States is rolling, nothing better get in the way. www.unisys.com

intel inside

pentium® II xeon™ PROCESSOR

Nasdaq is installing Unisys Aquanta QS/2 servers running on the Intel® Pentium® II Xeon™ processor.

UNISYS We eat, sleep and drink this stuff.

©1999 Unisys Corporation. Aquanta is a trademark of Unisys Corporation. Microsoft and Windows NT are registered trademarks of Microsoft Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks, and Pentium II Xeon is a trademark of Intel Corporation. Nasdaq is a registered trademark of The Nasdaq Stock Market, Inc.

MARKETINGTOOLS

FROM COMPUTERWORLD, THE NEWSPAPER FOR IT LEADERS

MARKETPACK

Direct response cards are among the most efficient tools in direct marketing. The effectiveness of Computerworld MarketPack has made it the leading card program in the industry.

COMPUTERWORLD MAGAZINES

Computerworld's award-winning editorial staff publishes a variety of annual magazines and monthly supplements focused on issues of interest to IT Leaders. Sponsorship of these publications aligns your branding message with a targeted editorial discussion of a particular IT topic or technology segment.

COMPUTERWORLD IT LEADER DATABASE

Now you can put your finger on the pulse of over 25,000 business professionals' buying habits for more than 100 IT products. The Computerworld IT Leader Database helps you understand your customers' buying intentions and strategically predict customer switching behavior or continued future brand preference.

COMPUTERWORLD CAREERS

For 32 years, *Computerworld*'s recruitment section has been a must-read for upwardly mobile IT professionals. And *Computerworld* was the first technology employment resource supplemented with career-specific editorial coverage every week. Reach new recruits in print, online, on campus, and face-to-face with *Computerworld* Careers.

COMPUTERWORLD MARKETPLACE

Computerworld MarketPlace is the most cost-effective vehicle for reaching the most active IT buyers in *Computerworld*'s audience. With 11 ad sizes and rates to choose from, there's something for every budget here.

CUSTOM PUBLICATIONS

If your message is too complex to be conveyed in a single page or spread, a custom published piece is the answer. *Computerworld*'s custom publications give you the flexibility to craft a complete product story that is easy to read, persuasive, and credible.

COMPUTERWORLD.COM

IT Leaders use *Computerworld.com* in combination with the print edition of *Computerworld* to get a continuous feed of essential news, analysis, and services not available anywhere else. Traditional banners as well as highly customized sponsorships are available to meet your marketing goals.

For more information on any of these invaluable resources, call your *Computerworld* sales executive or 1-800-343-6474 today.

www.computerworld.com

COMPUTERWORLD
THE NEWSPAPER FOR IT LEADERS

EDITORIAL CALENDAR

JUNE 21 - SEPTEMBER 6, 1999

COMPUTERWORLD ONLINE DOES IT FOR YOU

Why Search for Research?

Computerworld.com isn't just for techies. IT Marketing Leaders use it as a one-stop source for pertinent IT-related tidbits like QuickStudy and MindShare reports. And extensive links lead you to a wide range of Web resources, from user groups and conferences to white papers and books. Choose from around 100 papers and books on a variety of topics, including data warehousing, ERP, Linux and many more. Check it out in the "Resources" section at: www.computerworld.com/res/index.html.

COMPUTERWORLD ADVERTISING SALES OFFICES

Phone Fun

HEADQUARTERS
500 OLD CONNECTICUT PATH
FRAMINGHAM, MA 01701
800-343-6474

NORTHEAST
508-879-0700

MIDWEST
312-943-4266

SOUTH
972-233-0882

NEW YORK METRO
201-587-0090

SOUTHEAST
904-284-4972

SAN FRANCISCO BAY AREA
650-357-0200

PACIFIC NORTHWEST
425-451-0293

SOUTHERN CALIFORNIA
949-250-3942

MARKETPLACE/MARKETPACK
508-820-8249

ISSUE DATE	BUSINESS FEATURES	TECHNOLOGY FEATURES	BONUS DISTRIBUTION
JUNE 21 AD CLOSE: JUNE 14 RECRUITMENT CLOSE: JUNE 17	• IT in Brokerages, Insurance and Banking (Editorial contact: Kevin Fogarty) • 3rd Annual Hot Skills Report (Editorial contact: David Weldon) • Contracts, Rights and Rules for Contractors	**F** -Total Cost of Ownership (Editorial contact: Cynthia Morgan) **Q** -Cable Modems **C** -Connecticut Careers	• PC Expo in New York City
JUNE 28 AD CLOSE: JUNE 21 RECRUITMENT CLOSE: JUNE 24	• The New Cost of an IT Education PDAs, • The Super Recruiters • CareerAdvisor	**F** -Handhelds & Sub-notebooks (Editorial contact: Cathleen Gagne) **Q** -The Impact of Portals on IT **C** -Internet Careers	• Web Design & Development in San Francisco, CA • IT Consultants & Contractors Conference in Reston, VA • Year 2000 National Symposium/SMART-sourcing Conference in New Orleans, LA • VBITS '99 in New York City
JULY 5 AD CLOSE: JUNE 28 RECRUITMENT CLOSE: JULY 1	• Quarterly Hiring Survey (Editorial contact: David Weldon)	**F** -Is Java Ready for Prime Time? (Editorial contact: Cynthia Morgan) **Q** -Digital Wallets **C** -Minnesota Careers	
JULY 12 AD CLOSE: JULY 2* RECRUITMENT CLOSE: JULY 8 *EARLY CLOSE DUE TO HOLIDAY	• Questionable Career Moves • CareerAdvisor	**F** -Modernizing Legacy Databases (Editorial contact: James Connolly) **Q** -Hubs, Routers & Switches **C** -Insurance Careers	
JULY 19 AD CLOSE: JULY 12 RECRUITMENT CLOSE: JULY 15	• To be announced (To provide maximum reader value, many business section features are often late-breaking.)	**Q** -Common Gateway Interface **C** -Chicago Careers	
JULY 26 AD CLOSE: JULY 19 RECRUITMENT CLOSE: JULY 22	• CareerAdvisor	**Q** -Next Generation I/O **C** -Orlando, Jacksonville, Tampa & Tallahassee Careers	
AUGUST 2 AD CLOSE: JULY 26 RECRUITMENT CLOSE: JULY 29	• To be announced (To provide maximum reader value, many business section features are often late-breaking.)	**F** -Tools to Monitor Your Web Site's Use (Editorial contact: Cynthia Morgan) **Q** -Point to Point Tunneling **C** -Dallas & Fort Worth Careers	
AUGUST 9 AD CLOSE: AUGUST 2 RECRUITMENT CLOSE: AUGUST 5	• Examples of Best IT Bosses • CareerAdvisor	**F** -Building a Corporate Portal (Editorial contact: James Connolly) **Q** -Storage Area Networks	
AUGUST 16 AD CLOSE: AUGUST 9 RECRUITMENT CLOSE: AUGUST 12	• To be announced (To provide maximum reader value, many business section features are often late-breaking.)	**Q** -Network Appliances **C** -Virginia Careers	
AUGUST 23 AD CLOSE: AUGUST 16 RECRUITMENT CLOSE: AUGUST 19	• CareerAdvisor	**Q** -Universal Serial Bus **C** -Boston Careers	• SHARE in Chicago, IL • USENIX Security Symposium in Washington, DC
AUGUST 30 AD CLOSE: AUGUST 23 RECRUITMENT CLOSE: AUGUST 26	• To be announced (To provide maximum reader value, many business section features are often late-breaking.)	**F** - Internet Mail (Editorial contact: Cathleen Gagne) **Q** -IP-SEC **C** -Data Warehousing/Database Careers	• PeopleSoft User Conference in New Orleans, LA • Data Warehouse World in New York City
SEPTEMBER 6 AD CLOSE: AUGUST 30 RECRUITMENT CLOSE: SEPT 2	• 14th Annual Salary Survey (Editorial contact: David Weldon) • CareerAdvisor	**F** - Linux in the Enterprise (Editorial contact: Cynthia Morgan) **Q** -Mips, Megahertz, Mbytes & More	• Edison Electrical Institute IT Annual Conference in Atlanta, GA

Key to technology features

F - Field Report features are designed to help corporate IT managers select and implement key technologies, and typically based on user input or technical reviews. (Vendors may send basic information–such as press releases and user names–to contact and *Computerworld* will keep the information on hand for reference.)
Q - QuickStudy, a brief tutorial designed to help readers understand key technologies, terms and trends. (Vendors may contact stefanie_mccann@cw.com.)
C - Careers feature that anchors the recruitment advertising section.

This editorial calendar is subject to change at the discretion of *Computerworld*. Please check with your advertising sales representative to confirm issue editorial content.

COMPUTERWORLD
THE NEWSPAPER FOR IT LEADERS